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THESIS

MORE AIRFIELDS EQUALS MORE OPPORTUNITIES

by

Daniel C. Furleigh

March 2012

Thesis Advisor:	Carolyn Halladay
Second Reader:	Mikhail Tsypkin

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Owning and operating airports is an expensive business. For many local governments and private corporations involved, the business of airport management can be extremely lucrative when the facility and the operation are effectively and efficiently administered. For the DoD, airport management is a huge expense. During this time of historic budget reductions, one wonders whether the existing portfolio of military airfields can be sustained. The U.S. Air Force portfolio of airfields currently in place in the European theater is the focus of this research project because the United States has an extensive and long-standing inventory of airfields there. Ultimately, this thesis asks whether significant strategic and political changes necessitate a different approach to U.S. military airport management in Europe. The U.S. Air Force should stay in Europe, but it should convert some of its heavy, main operating bases to more flexible, "lighter" installations for both economic and strategic reasons.

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MORE AIRFIELDS EQUALS MORE OPPORTUNITIES

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Submitted in partial fulfillment of the
requirements for the degree of

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from the

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ABSTRACT

Owning and operating airports is an expensive business. For many local governments and private corporations involved, the business of airport management can be extremely lucrative when the facility and the operation are effectively and efficiently administered. For the DoD, airport management is a huge expense. During this time of historic budget reductions, one wonders whether the existing portfolio of military airfields can be sustained. The U.S. Air Force portfolio of airfields currently in place in the European theater is the focus of this research project because the United States has an extensive and long-standing inventory of airfields there. Ultimately, this thesis asks whether significant strategic and political changes necessitate a different approach to U.S. military airport management in Europe. The U.S. Air Force should stay in Europe, but it should convert some of its heavy, main operating bases to more flexible, “lighter” installations for both economic and strategic reasons.

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LIST OF ACRONYMS AND ABBREVIATIONS

ABS	Air Base Squadron
ABW	Air Base Wing
AFRICOM	United States Africa Command
AMS	Air Mobility Squadron
AOR	Area of Responsibility
ARW	Air Refueling Wing
AW	Airlift Wing
BRAC	Base Realignment and Closure
CENTCOM	United States Central Command
CONUS	Continental United States
CSL	Cooperative-Security Location
DoD	Department of Defense
ERI	En Route Infrastructure
EU	European Union
EUCOM	United States European Command
FOS	Forward-Operating Site
FW	Fighter Wing
HAW	Heavy Airlift Wing
ISR	Intelligence, Surveillance and Reconnaissance
JPS	Joint Pre-Position Site
JSF	Joint Strike Fighter
KMC	Kaiserslautern Military Community
MAC	Military Airlift Command
MMG	Munitions Maintenance Group
MMS	Materiel Maintenance Squadron
MOB	Main Operating Base
MUNSS	Munitions Support Squadron
NAVEUR	United States Naval Forces Europe
NATO	North Atlantic Treaty Organization
NEPA	National Environmental Policy Act

PRV	Plant Replacement Value
RAF	Royal Air Force
SAC	Strategic Air Command
SACEUR	Supreme Allied Commander Europe
SOG	Special Operations Group
TAC	Tactical Air Command
USAF	United States Air Force
USAFE	United States Air Force Europe
USAREUR	United States Army Europe
VBR	Vinnell, Brown & Root LLC
WRM	War Reserve Materiel

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I. INTRODUCTION

A. MAJOR RESEARCH QUESTION

Owning and operating airports is an expensive business. For many local governments and private corporations involved, the business of airport management can be extremely lucrative when the facility and the operation are effectively and efficiently administered. For the DoD, airport management is a huge expense. Building an airfield operating environment of interconnected runways, taxiways, and parking aprons comes at an enormous cost. Constructing maintenance hangars, cargo loading areas and passenger terminals produce a higher price tag. Providing critical safety and security functions from air traffic control services to weather support to perimeter and airport surveillance adds even more overhead to the bill. For stand-alone military airfields within the United States, all of these infrastructure and support function expenses are absorbed by the DoD. Such operating and maintenance costs associated with military airfields from which U.S. forces operate in overseas locations are typically shared between the United States government and the host nation.

This thesis investigates whether the DoD can continue to afford and sustain its existing portfolio of military airfields, especially in these days of increasingly constrained budgets. The U.S. Air Force portfolio of airfields currently in place in the European theater is the focus of this research project because the United States has an extensive and long-standing inventory of airfields there. Ultimately, this thesis asks whether significant strategic and political changes necessitate a different approach to U.S. military airport management in Europe.

B. IMPORTANCE

Who pays for what in regard to the U.S. portfolio of overseas military installations? C.T. Sandars, a civil servant in the British Ministry of Defense,

emphasizes in his book *America's Overseas Garrisons: The Leasehold Empire*, that the financial arrangements associated with the U.S. network of military installations varies from country to country.[1] It is the "wide variety of arrangements with differing political and financial features" that Sandars dubs the American "leasehold empire."[2] Sandars draws a distinct contrast between the American network of military installations and the pre-war colonial empires of Great Britain, France, and Russia. The colonial empires of Great Britain, France, and Russia were sustained by the forward presence of their respective militaries on territories that had been claimed by their respective governments. The "leasehold empire" of the United States maintained a global, forward presence by negotiating basing rights and financial agreements with host nations around the world.

The global network of U.S. military installations certainly includes a number of bases residing in U.S. territories. For example, Puerto Rico, a U.S. territory since 1898, has hosted installations of the U.S. Army, Navy, and Air Force during different periods of its history as a U.S. territory.[3] Guam, a U.S. territory since 1950, continues to host thousands of U.S. Navy and Air Force personnel through active installations on the island. Furthermore, Guam is preparing to host an additional 8,000 to 9,000 U.S. Marines projected to relocate to the Pacific island from Okinawa by 2014.[4] While these territorial installations assist in providing a global forward presence, the U.S. foots the entire bill for these facilities because no host nation exists with which to split the costs.

In his book *Embattled Garrisons: Comparative Base Politics and American Globalism*, Kent E. Calder, a professor at Johns Hopkins University, provides a

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[1] C.T. Sandars, *America's Overseas Garrisons: The Leasehold Empire* (New York: Oxford University Press, 2000).

[2] Ibid., 15.

[3] "Puerto Rico—US Military Facilities," GlobalSecurity.org, last modified May 07, 2011, http://www.globalsecurity.org/military/facility/puerto-rico.htm.

[4] Catherine Lutz, "American Military Bases on Guam: The US Global Military Basing System," Global Research, August 2, 2010, http://www.globalresearch.ca/index.php?context=va&aid=20405.

detailed analysis of the burden sharing or "Host-Nation Support" supplied by various countries around the globe.[5] Based on the particular arrangements between the host nation and the United States, Calder divides host nations into two groups:

- Affluent, but once-occupied nations—Japan, Germany, and South Korea
- Developing nations—Eastern Europe and Central Asia

With the first group, costs are shared between the United States and the host nation. However, the level of "Host-Nation Support" varies greatly among these nations, which likely reflects the variety of "leasehold" agreements identified by Sandars. The second group reflects what Calder considers to be far more common cases.[6] Within the developing nations around the globe, the United States tends to pay the host nation for basing rights.

The wars in Iraq and Afghanistan have sparked a huge increase in U.S. military installations across Central Asia, with the vast majority of these installations being established in developing nations, the group of nations in which the United States pays for access and basing rights. This trend is likely to continue as the United States postures its military forces to confront the dynamic twenty-first–century security environment. Calder points out: "Above all, we have continually seen the fragile, embattled standing of America's troops abroad in the domestic politics of most host nations, and their deepening reliance on money—America's own or that of allies—to stabilize their presence."[7] As the United States continues to struggle with its own economic woes, alternatives to this trend of reliance on money to stabilize a forward U.S. military presence must be considered.

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[5] Kent E. Calder, *Embattled Garrisons: Comparative Base Politics and American Globalism* (Princeton: Princeton University Press, 2007), 206–208.

[6] Ibid., 200.

[7] Ibid., 208.

C. PROBLEMS AND HYPOTHESES

The DoD is facing some of the most difficult times in terms of financial constraints in over a generation. Just before retiring earlier this year, then-Defense Secretary Robert Gates explained to lawmakers that the expected $400 billion in DoD cuts will produce a smaller military.[8] The Chief of Staff of the Air Force, General Norton Schwartz, recently voiced a similar sentiment for the Air Force. The front page of the *Air Force Times* published on December 19, 2011, announced: "We are going to get smaller."[9] "Getting smaller" here seems to mean going to fewer places and doing fewer things, even as senior defense leaders insist that the cuts will affect absolute numbers but not quality of the force. Nearly everything is up for review, including the efficacy of maintaining so much infrastructure, including airfields, in Europe.

1. Future Security Environment

Predicting the future security environment is a central debate of numerous strategic and political discussions. Will there be a twenty-first–century peer competitor to the United States? Will rogue nations continue to present a threat requiring containment, deterrence or direct action? Will extremists and terror networks continue to thrive in the Information Age? Will humanitarian relief missions remain a key component of global military actions? This thesis does not attempt to answer all of these questions in detail. However, the strategies adopted by successive presidential administrations and military leaders reflect how the United States will be postured, in terms of force structure and base structure, for the future security environment. Therefore, review and analysis of the National Security Strategy and related military strategies will be key documents in the further development of this thesis. Additionally, the

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[8] Leo Shane III, "Gates: DOD budget cuts will require rethinking missions, benefits," *Stars and Stripes*, June 15, 2011, accessed December 16, 2011, http://www.stripes.com/gates-dod-budget-cuts-will-require-rethinking-missions-benefits-1.146688.

[9] General Norton Schwartz, interview by Vago Muradian, "'Readiness is a prime imperative': Schwartz talks Dover, budgets and a smaller Air Force with less depth and fewer capabilities," *Air Force Times*, December 19, 2011, 18–20.

congressional testimony of U.S. European Command's combatant commander and respective posture statements will provide additional insights into how the United States is positioned to deal with security threats across the European theater.

2. Why Does the U.S. Military Remain Heavily Invested in Europe?

Every spring, the U.S. Combatant Commanders travel to the nation's capital to provide Congress with the current "posture" of their respective commands. A large part of this effort includes testimony provided by the Combatant Commanders to both the Senate Armed Services Committee and the House Armed Services Committee. During the annual hearing of the Commander of U.S. European Command before the Senate Armed Services Committee on March 29, 2011, Senator Joe Lieberman asked, "What the heck are we still doing in Europe?"[10]

Senator Lieberman's question was preceded by comments concerning the intense financial strain facing the nation and the Department of Defense, and the suggestions by some government officials to reduce our military footprint in Europe because World War II and the Cold War were won decades ago. Admiral James G. Stavridis, the current Commander of U.S. European Command (EUCOM), answered Senator Lieberman's question by first explaining the significant reduction in U.S. military presence across Europe since the end of the Cold War. Admiral Stavridis estimated the United States has experienced a 75-percent reduction in its forward European presence over the past twenty years. The "big, muscular operation" of the U.S. military's European presence during the Cold War included approximately 400,000 troops and 1,200 bases and sites. Today, EUCOM is made up of 80,000 troops operating from about twelve

[10] U.S. European Command Posture Statement of 2011, Before the Senate Armed Services Committee, 112th Cong. (2011) video accessed October 16, 2011 (statement by Senator Joseph Lieberman) http://www.eucom.mil/english/Posture-Statement.asp.

main operating bases and many other additional sites across Europe.[11] Despite this significant reduction in EUCOM's force structure, Admiral Stavridis explained the U.S. military's forward presence in Europe remains extremely valuable for:

- Reassuring allies
- Deterrence
- Conducting military operations
- Training and building partnership capacity[12]

Still, Admiral Stavridis said that EUCOM planners were analyzing additional U.S. force reductions in Europe, and that he was "comfortable" with taking "a little bit more" from the existing U.S. forward military presence in Europe.

This thesis will argue for an alternative approach. While getting smaller may be inevitable due to the looming budget reductions, going to fewer places and doing fewer things may not. Adjustments to the current U.S. overseas military presence actually may allow the United States to go to more places and do more things for more efficiently spent sums. In 1990, James R. Blaker, a senior executive with the DoD, recognized a "basing paradox" pertaining to the U.S. overseas base structure: "a shrinking overseas basing system that costs more each year."[13] Such calculus seems at first blush to militate for rolling up U.S. bases overseas. But such experts as Calder actually argue for "more and 'lighter' bases, with many distributed across remote, sparsely governed parts of the developing world."[14] This research project examines this claim and finds that it is possible to increase the number of U.S. Air Force airfields in Europe, while simultaneously saving money and improving strategic effectiveness.

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[11] U.S. European Command Posture Statement of 2011, Before the Senate Armed Services Committee, 112th Cong. (2011) video accessed October 16, 2011 (statement by Admiral James G. Stavridis) http://www.eucom.mil/english/Posture-Statement.asp.

[12] Ibid.

[13] James R. Blaker, *United States Overseas Basing: An Anatomy of the Dilemma* (New York: Praeger, 1990), 125.

[14] Calder, *Embattled Garrisons*, 33.

3. Unknown Influence of Technology

Technology likely will play a significant role in shaping the twenty-first–century security environment. Technological advancements in aviation constantly forced governments and militaries to rethink strategy throughout the twentieth century. In a matter of four to five decades, the size of military airfields grew from ten-acre parcels of land to several thousand acres of land required to support high-performance jet aircraft. Technological advancements in aviation are likely to continue. The use of unmanned aerial vehicles or remotely piloted aircraft, of all shapes and sizes, undoubtedly will continue to increase across all four U.S. military services. Tiltrotor aircraft, like the V-22 Osprey, are capable of flying as a helicopter and an airplane. Perhaps technological advancements in aviation will reverse the trend of expansive, thousand-acre airfields, and future aircraft will enable the U.S. military to return to airfields the size of most backyards or helipads. Or, the range of aircraft will enable an increasing number of missions to launch and depart from the United States, eliminating the need for overseas airfields.

The topic of technology's influence on the future security environment and subsequent influence on military installations of tomorrow is far too large to tackle in this particular thesis. Recent technological advances in computers and communications enable the military services of today to reduce the footprint of forward deployed forces. For example, unmanned aerial vehicles flying over the skies of Iraq and Afghanistan not only replace the pilot in the cockpit, but these vehicles are also controlled from sensor operators located thousands of miles away within the United States. Despite these technological advances, an assumption is made that the United States will continue to rely on a network of airfields to project military power across the globe.

D. LITERATURE REVIEW

In October of 2008, EUCOM requested a study of Stuttgart Army Airfield. U.S. Army Europe (USAREUR) maintained a small presence at the base with an Aviation Company as the leading command echelon. Through late 2007 and

most of 2008, airlift requirements operating to and from Stuttgart Army Airfield surged in support of operations in Iraq and Afghanistan, the creation of U.S. Africa Command (AFRICOM), and the placement of AFRICOM headquarters in the Stuttgart area. The U.S. Army's intrinsic capabilities assigned to Stuttgart Army Airfield were quickly overwhelmed. The study group, in which I participated, discovered USAREUR shared the airfield with German civilians who operated Stuttgart International Airport, Germany's seventh-busiest airport, on the other side of the field. In this modern commercial airport with plans for further expansion and growth, German companies maintained tremendous capability to support airlift and aircraft operations across the airfield. U.S. military officials in Europe had yet to explore the potential partnership opportunities with German civilians and companies to support the dramatic increase in operations at Stuttgart Army Airfield.

The research conducted during the study of Stuttgart Army Airfield led to speculation about similar happenings at other U.S. military airfields across Europe. Such "spit-balling" led to this research project and studying all USAFE airfields in the European AOR. In this time of diminishing financial resources, were opportunities for greater partnership and cooperation at USAFE airfields going unnoticed and unexplored?

Little has been written with the precise focus of U.S. military airfields. A group of historians and officials from the Air Force Historical Research Agency, led by editor Frederick J. Shaw, organized a detailed history of U.S. Air Force installations. In 2004, they published their findings in the book *Locating Air Force Base Sites: History's Legacy*.[15] Shaw's group provided the most extensive research pertaining to Air Force airfields conducted to date. While *History's*

[15] Frederick J. Shaw, ed. *Locating Air Force Base Sites: History's Legacy*, Air Force History and Museums Program, United States Air Force, Washington D.C., 2004. It is important to note Shaw's group does not distinguish between an Air Force installation and an Air Force airfield. While many installations include an airfield, not all do. Therefore, the two terms are not completely interchangeable. Many of the studies (Calder, Sandars and Blaker) reviewed during the research for this project looked at overseas military installations in their entirety. This research project will investigate a subset of military installations, Air Force airfields.

Legacy was limited to the study of domestic USAF airfields, the findings of Shaw's group definitely has relevance to this research project.

On the other hand, numerous volumes have been written on the global basing system of U.S. military installations generally. Blaker, Sandars, and Calder each published studies with different perspectives on the U.S. overseas basing structure. Despite the lack of emphasis specifically on airfields, their post-Cold War studies on U.S. military installations around the globe do have significant application to this concentrated thesis on USAFE airfields. Of the three, Calder's *Embattled Garrisons*, published in 2007, is the most pertinent since it emphasizes the challenges with maintaining a global basing structure in the post-9/11 era. In this most unpredictable era, overseas bases are increasing difficult to sustain politically,[16] and financially (with rising costs and shrinking budgets).

1. Figuring the Costs Associated with Overseas Military Airfields

Exactly how much does the U.S. pay for basing rights in order to maintain its global network of U.S. military installations? This question is extremely difficult to answer. The total can be partially estimated by calculating the foreign aid and foreign military sales a nation receives from the United States. Yet these figures alone are likely far from precise amounts. Calder argues that, "the overall packages that host nations receive, and their relationship to the details of basing arrangements themselves, generally remain both classified and largely insulated from public scrutiny."[17] Therefore, this project will not attempt to answer this particular question. An assumption will be made that the costs associated with maintaining a global network of Air Force airfields is significant enough for it to be included in the DoD and Air Force's search for potential savings.

Following Calder's study, it becomes evident the costs associated with maintaining a global U.S. military presence are rising. Host-Nation Support does

[16] Calder, *Embattled Garrisons*, 2.

[17] Ibid., 200.

not offset the costs by much. Calder emphasizes: "Nowhere … does a host nation pay the salaries of American forces overseas. And rarely does it pay their operational costs."[18] These operational costs are estimated to absorb 20 percent of the DoD's annual budget.[19] Perhaps, then, the operational costs of maintaining a forward overseas presence should be targeted for savings? The average annual DoD budget for FY 2012 through FY 2016 is estimated to be nearly $584 billion.[20] One-fifth of this amount is $116.8 billion. Reducing these operational costs associated with maintaining overseas bases by just 1 percent produces more than $1 billion savings.

Almost two decades ahead of Calder, Blaker recognized similar difficulties in pinpointing the exact costs involved with the overseas basing network. Additionally, he identified the rising costs associated with maintaining the U.S. forward military presence. Blaker defined two types of costs relating to the overseas basing network, fixed costs and permission costs. His analysis suggested that fixed costs, primarily maintenance and operating costs, remained fairly static over the thirty-year period studied (1960–1990). He estimated the U.S. paid approximately $5 billion a year in fixed costs during this period.[21] On the other hand, permission costs are payments by the U.S. that buy the privilege of basing rights within a host nation. Blaker discovered permission costs were consistently on the rise during the same thirty-year period.

However one defines the costs associated with the U.S. overseas basing network, researchers seem to agree the total costs have been steadily rising. This rise in costs occurred despite a gradual decrease in the overall number of military installations abroad, Blaker's aforementioned "basing paradox." A higher cost for lesser facilities certainly is an alarming trend. Blaker wrote: "The notion

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[18] Calder, *Embattled Garrisons*, 190.

[19] Ibid., 214.

[20] Office of the Under Secretary of Defense (Comptroller)/CFO, "United States Department of Defense Fiscal Year 2012 Budget Request," February 2011, accessed December 16, 2011, http://comptroller.defense.gov/defbudget/fy2012/FY2012_Budget_Request_Overview_Book.pdf, 1-2.

[21] Blaker, *Anatomy of the Dilemma*, 104.

that the presence or absence of U.S. military bases is essentially a question of money will ultimately shift the question of how much basing is enough away from strategy and toward the bottom line of monetary costs."[22] The United States cannot afford, strategically, to find itself in this position.

2. History of Domestic Air Force Airfields

A small drill field at Fort Myer, Virginia, became the U.S. Army Signal Corps' first airfield from 1908–1909, allowing the Wright Brothers to conduct flight trials of their "heavier-than-air flying machine."[23] The first forty years of military air power experienced a continuous "ebb and flow of base openings and closings."[24] World War I witnessed the network of military airfields grow to 105 installations,[25] only to have the Army Air Service's collection of airfields diminish to just twenty-six airfields by 1923.[26] Two decades later, the number of military airfields owned and operated by the Army Air Forces[27] swelled to more than 400.[28] Again, such growth did not last. A strategy of divestment and draw-down began well before victory was assured in Europe or the Pacific. By the time the

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22 Blaker, *Anatomy of the Dilemma*, 113.

23 Shaw, *History's Legacy*, 8.

24 Ibid., 5.

25 Ibid., 12.

26 Ibid., 14.

27 Before the establishment of an independent Air Force, the Army's aviation assets were organized within an evolving organizational structure. In 1907, an Aeronautical Division was established within the U.S. Army's Signal Corps, and initial responsibilities of developing an air arm fell to the Signal Corps. A decade later, the Army Air Service was created raising its standing from a division within the Signal Corps to a combatant arm of the line along with the Infantry, Cavalry, Signal Corps, and others. Aviation leaders, led by the controversial General Billy Mitchell, continued to fight for the creation of an independent air force separate from the Army and Navy. However, the transition to an independent air arm would be slow. Established in 1926, the Army Air Corps expanded and modernized the fleet of military aircraft over the next 15 years. The final precursor of an independent Air Force was the U.S. Army Air Forces, created in 1941 to better manage the quickly expanding force as the U.S. headed into World War II. Finally, the U.S. Air Force was established on September 18, 1947 with the signing of the National Security Act of 1947.

28 Shaw, *History's Legacy*, 41.

Air Force was established as a separate service in September 1947, it inherited an inventory of 115 major installations.[29]

During the 1950s, the Air Force experienced significant growth. The advancing Soviet threat drove the Truman and Eisenhower administrations to push the long-range bomber and intercontinental ballistic missile capabilities of the Air Force's Strategic Air Command (SAC) to the forefront of DoD priorities. Primarily built on the "temporary" installations of World War II, the Air Force inventory of installations peaked at 162 in 1956.[30] However, this era represented the last time the Air Force established new, domestic Air Force Bases as eight new installations were built between 1950 and 1959.[31]

The 1960s ushered in a new era for Air Force installations as the Kennedy Administration introduced an important shift in U.S. national defense strategy—from one of "massive retaliation" to one of "flexible response."[32] This strategic shift pushed the Air Force tactical and airlift forces up the ladder of defense priorities as conventional forces would be tasked to respond to "conflicts and

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[29] Shaw, *History's Legacy*, 47.

[30] Ibid., 89.

[31] Ibid., 56.

[32] Gregory W. Pedlow, ed., Chief, Historical Office, Supreme Headquarters Allied Powers Europe, *NATO Strategy Documents 1949-1969*, accessed December 26, 2011, XIX–XXV, http://www.nato.int/docu/stratdoc/eng/intro.pdf. "Massive Retailiation" refers to the strategy employed by NATO and established by MC 14/2, "Overall Strategic Concept for the Defence of the NATO Area," on May 23, 1957. With MC 14/2, NATO's nuclear arsenal was instituted as the focus of the Alliance's deterrence strategy. NATO marched forward to "ensure the ability to carry out an instant and devastating nuclear counteroffensive by all means available." Technological developments associated with nuclear strike capabilities altered the playing field from 1957 to 1962. The advent of long-range bombers and intercontinental ballistic missiles drove NATO leaders to rethink their strategy of "massive retaliation." A second crisis in Berlin from 1958 to 1962 and the 1962 Cuban Missile Crisis were both resolved with non-nuclear responses. U.S. Secretary of Defense Robert McNamara advanced the concept of "flexible response," providing options of limited war before all-out nuclear war, at a North Atlantic Council meeting in December 1961. Changes to NATO's strategy stalled in the mid-1960s as the Johnson Administration was increasingly focused on events in Vietnam, and partly due to France's opposition to changing the strategy from "massive retaliation." After France withdrew from NATO's integrated military command structure in March 1966, the Alliance advanced toward officially changing the strategy to "flexible response." Ultimately, this strategy shift was achieved with the approval of a new "Overall Strategic Concept for the Defence of the NATO Area," MC 14/3, on 16 January 1968.

insurgencies around the world."[33] While Tactical Air Command and Military Airlift Command grew, Strategic Air Command's prominence faded.

Shaw's group identified the period from 1961 to 1987 as a period of "retrenchment, consolidation, and stabilization."[34] The retrenchment of installations and airfields was an obvious consequence of organizational reductions and subsequent personnel reductions. Organizationally, the Air Force experienced a reduction from 193 wings in 1962 to 150 by 1987.[35] Personnel reductions experienced a similar trend during the same period. For example, the Air Force employed 52,000 pilots in 1961. However, by 1980 this figure was cut in half to less than 26,000 pilots.[36] Consolidation was encountered as many installations began to develop as "multi-mission" bases.[37] As missions changed and adjusted based on the shift in strategy to "flexible response" and technological advances, many installations transferred hands from one command to another. Jurisdiction among commands surfaced as an issue at Air Force installations.[38] However, these early consolidations leading to multi-mission bases likely saved many installations from closure by the Base Closure and Realignment Commissions of the past twenty-five years.

Finally, stabilization became a characteristic of this era as Congressional politics became more and more influential in making changes to DoD's inventory of CONUS installations. During the 1960s, base closure decisions were announced and executed within a matter of a few months as the DoD, led by Secretary of Defense Robert S. McNamara, pushed for greater "efficiency and cutting waste in the defense establishment."[39] The process of closing DoD installations underwent a significant shift in the 1970s and 1980s as "Congress

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33 Shaw, *History's Legacy*, 103.

34 Ibid., 105.

35 Ibid., 103.

36 Ibid., 129.

37 Ibid., 105.

38 Ibid., 126.

39 Ibid., 101.

mandated that the Department of Defense (DoD) comply with the requirements of the National Environmental Policy Act (NEPA) of 1969 before closings could occur."[40] Over the years, Shaw's group identifies the involvement of numerous politicians (from Congressmen to Senators to a campaign promise by then Presidential-Candidate Ronald Reagan in 1980) in base closure proceedings. Yet, they credit the "congressionally mandated application of NEPA" with having the greatest influence in the process during this era of "retrenchment, consolidation and stabilization."[41] In 1987, the Air Force maintained and operated 104 major installations.[42]

For Air Force installations, the post-Cold War era can be summed up by one four-letter acronym, BRAC. The DoD has conducted five rounds of Base Closure and Realignment Commissions, or BRAC, since 1988. BRAC was created to somewhat overcome the legislative paralysis that developed during the 1970s and 1980s concerning base closures and political interference. The 1988 BRAC Report identifies this struggle in the following terms:

> For over a decade, the Department of Defense has been unable to improve the effectiveness of the military base structure to realize the significant savings that might have been gained through the realignment and closure of unnecessary or underutilized military bases. This situation is largely the result of 1977 legislation that mandated Congressional approval for any closure affecting 300 or more civilian employees of the Department. In this same legislation, the Department was expressly directed to comply with the procedural requirements of the National Environmental Policy Act for all base closure decisions.[43]

The success of the 1988 BRAC and a rapidly changing security environment helped to produce Public Law 101-510, the Defense Base Closure

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[40] Shaw, *History's Legacy*, 101.

[41] Ibid., 133.

[42] Ibid., 139.

[43] Department of Defense, *Defense Secretary's Commission on Base Realignment and Closure*, December 29, 1988, accessed November 21, 2011, 6, http://www.defense.gov/brac/docs/1988.pdf.

and Realignment Act of 1990. Subsequently, Public Law 101-510 resulted in three more rounds of BRAC, 1991, 1993, and 1995.[44] With the Soviet threat gone, the Air Force underwent drastic reductions in its size and budget. Shaw's group identified a 30-percent budget cut from 1990 to 1995 alone.[45] The first four rounds of BRAC enabled the Air Force to address the massive post-Cold War cuts in personnel, aircraft and resources by closing and realigning more than thirty installations. Ultimately, the number of domestic Air Force installations had declined to sixty-nine by 2003.[46]

After a ten-year hiatus, BRAC returned in 2005 as then Secretary of Defense Donald Rumsfeld focused the DoD on transformation. This latest round was by far the largest to date as the "2005 BRAC recommendations exceeded the number considered by all prior BRAC Commissions combined."[47] The Air Force proposed numerous realignments and closures to the 2005 BRAC as it pursued a strategy "to increase effectiveness and reduce excess infrastructure and capacity by realigning and right sizing operational and support units."[48] However, only two of the major closures proposed by the Air Force were active duty installations, Ellsworth and Cannon Air Force Bases. The 2005 BRAC rejected the Air Force recommendations to close Ellsworth and Cannon, and both bases remain operational installations today.

After studying nearly 100 years of Air Force installation establishment and disestablishment, Shaw's group concluded that "the decisive factor in determining the location and continuation of an Air Force installation has been its

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[44] Defense Base Closure and Realignment Act of 1990, Pub. L. 101-510, Sec. 2902, (as amended through the National Defense Authorization Act of Fiscal Year 2003) accessed November 22, 2011, http://www.defense.gov/brac/docs/legis03.pdf.

[45] Shaw, *History's Legacy*, 186.

[46] Ibid., 203.

[47] Defense Base Closure and Realignment Commission, *Final Report to the President*, Vol 1, "Executive Summary," accessed November 22, 2011, http://www.brac.gov/docs/final/ExecutiveSummary.pdf.

[48] Department of Defense, *Report to the Defense Base Closure and Realignment Commission, Department of the Air Force Analysis and Recommendations: BRAC 2005*, Vol V, Part 1 of 2, May 2005, 1, accessed November 22, 2010, http://www.defense.gov/brac/pdf/VAirForce-o.pdf.

suitability for its military mission."[49] "History's legacy" is another finding identified by this group of historians, as sixty-five of the sixty-nine active, domestic Air Force installations in 2003 had been active installations during World War II.[50] The two tenets of "history's legacy" are:

- Money follows the path of prior investment.
- Criteria used for selecting a location for an air base have been remarkably stable.[51]

For the purposes of this thesis, the second tenet is assumed to be true. It is the first tenet of "history's legacy" that is explored in reference to U.S. Air Force airfields in Europe. Shaw's group argues the decisive factor in maintaining an air base is its suitability to its military mission. Yet, historical evidence reflects money certainly follows the path of prior investment as numerous U.S. airfields within the United States and in Europe have undergone significant mission changes over the years.

Another recommendation produced by the 2005 Base Closure and Realignment Commission was the joint basing program. Under this recommendation, twelve joint bases were established from twenty-six separate installations. Nine of the twelve joint bases established united a major Air Force airfield with the military installations in close proximity to the airfield.[52] With full operational capability achieved at each of the twelve joint bases in 2010, DoD officials expect to see efficiencies produced from this experience of consolidating and streamlining installation support processes this year. The lessons learned from the joint basing program within the United States and its territories will certainly generate considerations for more effective and efficient management of

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[49] Shaw, *History's Legacy*, 204.

[50] Ibid., 203.

[51] Ibid. The criterion for airfield selection primarily refers to flat parcels of land with the ability to align runways in the direction of the prevailing wind.

[52] "Basing Directorate," Office of the Deputy Under Secretary of Defense (Installations and Environment), last modified November 12, 2010, http://www.acq.osd.mil/ie/jointbasing_update.shtml.

USAFE's airfield portfolio. At a minimum, initiatives to consolidate and streamline airfield infrastructure and support facilities with joint and international partners in close proximity to USAFE airfields should be accepted.

3. Overseas Airfields

This research project will analyze the existing U.S. Air Force airfield portfolio within the U.S. European Command's area of responsibility (AOR).[53] A detailed study of each identified Air Force airfield will assist in determining if "history's legacy" (as defined by Shaw's group) shapes the airfield portfolio of the European theater. Additionally, the 1988 BRAC Commission outlined the relationships between base structure, force structure and strategy when they stated, "The base structure should properly be derived from the force structure, which in turn should reflect national security strategy."[54] Therefore, examination of the force structures and security strategies implemented and pertaining to the U.S. forward military presence in Europe will be essential for understanding the network of airfields within this region.

Calder recognizes the vital importance of overseas bases from both a tactical military function and a strategic geopolitical function. However, he questions how much longer the United States will be able to maintain its current network of foreign bases. Calder states, "Other great powers, such as Russia, Britain, and France, have already, by and large, lost their global basing networks, under a range of economic and political pressures."[55] As previously mentioned

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53 "Unified Command Plan," Department of Defense, last modified October 28, 2011, http://www.defense.gov/ucc/. The Unified Command Plan 2011 outlines the "missions, responsibilities, and geographic areas of responsibility" for the nine U.S. combatant commands. Three of the combatant commands are considered functional commands: Special Operations Command, Strategic Command and Transportation Command. These functional commands will not be studied as part of this research project since the vast majority of military installations and forces are aligned under the regional combatant commands of which they reside. The six regional combatant commands include European Command, Pacific Command, Southern Command, Central Command, Northern Command and Africa Command. The entire globe is divided into six areas of responsibility delegated to these six regional commands.

54 Department of Defense, *Defense Secretary's Commission on Base Realignment and Closure*, 30.

55 Calder, *Embattled Garrisons*, 1.

in this chapter, the economic pressures on the Department of Defense, to include its global basing network, are certainly increasing.

Calder describes a historical influence similar to the Shaw group's "history's legacy." While Shaw's group focused on airfields, Calder studied all military installations. And while Shaw's group recognized the substantial influence of World War II on the domestic Air Force installations of 2003, Calder recognized an imperial influence, both British and American, on the U.S. global basing network dating back to the nineteenth century.[56] Calder states, "It is far easier to change functions at existing bases than to move bases themselves."[57] Again, "history's legacy" on the overseas airfields of the U.S. Air Force will be studied in this research project.

Embattled Garrisons spends many pages and multiple chapters on the impact "base politics" has on military installations around the world. For Calder, base politics is extremely influential in determining the stability and future success of overseas military installations. Amid the global struggle against terrorism, Calder argues a global basing structure heavily invested in the developing regions of the world (Asia, Africa and Latin America)[58] will push "base politics" to the vanguard of strategic concerns for maintaining an American presence.

Similar to Calder's *Embattled Garrisons* and the Shaw group's study of domestic airfields, Sandars discovers "history's legacy" holds true as the vast majority of military installations held by the U.S. can trace their roots back to World War II. What Sandars unveils with historical precision is the deliberate, global posturing employed by the U.S. before entering and during the war. One example of such posturing was the 99-year leases signed in March 1941 for American bases to be established on eight islands in the Atlantic and Caribbean.

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56 Calder, *Embattled Garrisons*, 10–13.

57 Ibid., 35.

58 Ibid., 254.

The Roosevelt Administration acquired these basing rights on British colonial possessions in exchange for fifty obsolete naval destroyers.[59]

Sandars' in-depth review of how American military installations were transformed from "conquest to containment" in the European theater should prove to be a tremendous resource for this study. Sandars credits the United States and its "leasehold empire" as being "remarkably successful in retaining access to the bases she needed."[60] Additionally, it is difficult to argue against the success of the American global network of military installations, established during World War II and eventually winning the Cold War.[61]

Yet, consider for a moment Calder's thesis regarding the global struggle against terrorism requiring possibly a new approach to military installation management within the "arc of instability." How the United States transforms its existing network of military installations to meet the demands of this twenty-first–century struggle could prove to be paramount.

E. METHODS AND SOURCES

C.T. Sandars arranged the majority his research in *America's Overseas Garrisons* by different regions around the world: Asia, Europe, Mediterranean, and the Middle East. This research project will take a similar approach to a focused review of the network of U.S. Air Force airfields within the European theater. While Europe is just one of six regional areas of responsibility established by the Unified Command Plan, its significance to the U.S. forward military presence within Europe and around the globe is massive.

The EUCOM AOR encompasses fifty-one countries—all the nations of Europe and Israel. Its water space includes large portions of the Atlantic and

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[59] Sandars, *Leasehold Empire*, 3.

[60] Ibid., 327.

[61] The author is not suggesting here that the American global network of military installations was the decisive factor in winning the Cold War. However, when partnered with the policies of multiple Presidential administrations and an evolving strategy to contain communism and halt Soviet expansion, this global network certainly played a role as a key enabler of U.S. policies and military strategies.

Arctic Oceans, and the Mediterranean, Baltic, Black, and Caspian Sea. Overall, the EUCOM AOR comprises a population near 1 billion people, 10.7 million square miles of land, and 13 million square miles of ocean.[62] Figure 1 provides a map of the EUCOM AOR, colored in blue.

Figure 1. EUCOM Area of Responsibility (From Google, 2011)[63]

Why Europe? European Command was selected as the focus of this research topic since it was one of the original regional combatant command's established in 1947. Due to its longer history and maturity as a regional command, a plethora of resources pertinent to this study were available for analysis. For nearly forty years, Europe served as the frontlines of the Cold War between the United States and the Soviet Union. How the network of U.S. Air Force airfields within Europe has adjusted and evolved over the years will likely

[62] U.S. European Command, Directorate of Public Affairs, "Fact Sheet: U.S. European Command," accessed October 16, 2011, http://www.eucom.mil/doc/22822/u-s-european-command.pdf.

[63] "EUCOM Regional Map," Google, accessed December 12, 2011, http://www.google.com/search?q=EUCOM+regional+map.

provide vital lessons learned for other regions adjusting to an evolving environment, changing strategies and developing political structures. Of course, similar studies focused on the areas of responsibility of the other regional combatant commands is encouraged and recommended.

To ensure a narrower scope for this project a decision was made to limit its focus to U.S. Air Force airfields. While regional combatant commands include components of all four military services, this thesis will only study the airfield portfolios of the Air Force component within Europe. The *2010 Base Structure Report* and other documents will be used to identify the U.S. Air Force airfields across Europe. Every attempt will be made to include all Air Force airfields that have a permanent presence, either personnel or aircraft, stationed at the airfield. This project is not intended to be a debate about which installations and facilities are or are not included as part of the "American Empire" of military installations around the globe.

F. THESIS OVERVIEW

The remaining chapters will analyze USAFE's airfield portfolio utilizing a commonly used framework for categorizing military installations: *Main Operating Bases (MOB), Forward-Operating Sites (FOS), Cooperative-Security Locations (CSL), Joint Pre-position Sites (JPS) and En Route Infrastructure (ERI)*. Adam J. Hebert, a senior editor with Air Force Magazine, wrote the DoD established this framework in 2004 when it initiated a review of the Department's global posture.[64] Calder credits the development of this framework to General James Jones, the former Supreme Allied Commander Europe (SACEUR) and former National Security Advisor to President Obama.[65] On March 24, 2004, General

64 Adam J. Hebert, "Presence, Not Permanence," airforce-magazine.com, August 2006, Vol. 89, No. 8, accessed November 25, 2011, http://www.airforce-magazine.com/MagazineArchive/Pages/2006/August%202006/0806presence.aspx.

65 "National Security Advisor: General James L. Jones, USMC (Ret)," White House, accessed November 11, 2011, http://www.whitehouse.gov/administration/eop/nsc/nsa/. General Jones was SACEUR and Commander of EUCOM from January 2003 to December 2006. Since retiring from military service in February 2007, General Jones has continued his government service as a civilian in a number of politically appointed positions, including National Security Advisor to the President where he has served from January 2009 to October 2010.

Jones, then-SACEUR, outlined this framework during his testimony to the House Armed Services Committee.[66] The framework effectively organizes military installations, including airfields, in different sizes relating to organizations assigned and support infrastructure established. The operational costs associated with the different categories of airfields will be largely estimated based on the size of the organization and personnel assigned.[67]

The portfolio of airfields identified in the following chapters is not intended to be all-inclusive; the airfields named are not the only airfields in Europe from which USAFE units operate. USAFE units frequently operate from airfields not named in this report for contingency operations, exercises, and other training opportunities. The *permanent*[68] presence of USAFE personnel, aircraft or materiel was established as a necessary characteristic for an airfield to be considered part of the USAFE portfolio.

Chapter II: Main Operating Bases (MOB).

Chapter III: Forward-Operating Sites (FOS).

Chapter IV: Cooperative-Security Locations (CSL).

Chapter V: Joint Pre-position Sites (JPS).

Chapter VI: En-Route Infrastructure (ERI).

Chapter VII: A summary of the findings discovered in Chapters II through VI will be provided in this final chapter. Recommendations for policymakers and U.S. Air Force strategic planners will also be provided for future consideration. A

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66 Calder, *Embattled Garrisons*, 266.

67 Office of the Deputy Under Secretary of Defense (Installations and Environment), *Base Structure Report Fiscal Year 2010 Baseline: A Summary of DoD's Real Property Inventory*, 2010, DOD-5. The title of this report will be abbreviated to *2010 Base Structure Report* for the remainder of the document. Personnel data reflected in this report is derived from the Department of Defense's *2010 Base Structure Report*. The personnel numbers utilized do not necessarily identify the exact number of military and civilian members employed at each airfield. The personnel totals taken from the *2010 Base Structure Report* "attempt to show all personnel regardless of Military Service affiliation assigned to individual sites or locations, totals should not be confused and viewed as representing only individual Military Service total strength."

68 The term *permanent* in this sense relates to the forces, both aircraft and personnel, being stationed at the airfield on a non-rotational basis. For permanently assigned aircraft, such airfields are considered the home base. Personnel assigned to these airfields are transferred to the installation as a Permanent Change of Station, or PCS. For most USAFE airfields, personnel *PCSing* to the installation usually stay for two to three years.

goal of this study is to propose less expensive alternatives (compared to today's basing portfolio) to enable a continued, forward U.S. Air Force presence in Europe and other combatant command regions.

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II. MAIN OPERATING BASES

A. INTRODUCTION

Admiral Stavridis, the current EUCOM Commander, provided the following statistical summary of USAFE forces and infrastructure in his *2011 EUCOM Posture Statement*: 26,000 active-duty, guard and reserve personnel; five main operating bases (MOBs); nine wings; and many geographically separated locations.[69] The five main operating bases in USAFE are: Ramstein Air Base, Germany; Spangdahlem Air Base, Germany; Royal Air Force (RAF) Lakenheath Air Base, United Kingdom; RAF Mildenhall Air Base, United Kingdom; and Aviano Air Base, Italy. Figure 2 depicts a map of these five MOBs.

Calder's definition of a MOB submits specific characteristics of such installations: enduring strategic value, common anchor for smaller bases, existence of substantial infrastructure, and where troops are stationed with their families.[70] Michael O'Hanlon, author of *Unfinished Business: U.S. Overseas Military Presence in the 21st Century* and a senior fellow at the Brookings Institution, establishes "main operating base" as a term applied by the Bush Administration[71] meaning military facilities "defined as having permanently stationed U.S. combat forces, well-developed base infrastructures including for family support, and robust security protection."[72] For the purposes of this study

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[69] U.S. European Command Posture Statement of 2011, Before the House Appropriations Committee, Subcommittee on Military Construction, Veterans Affairs, and Related Agencies, 112th Cong. (2011) written testimony prepared by Admiral James G. Stavridis on March 29, 2011, accessed October 16, 2011, 27, http://www.eucom.mil/english/Posture-Statement.asp. The annual testimony provided to Congress by the nine combatant commanders and service chiefs of staff is commonly referred to as the respective command or service's "Posture Statement." In this case, Admiral Stavridis' testimony is referred to as the *2011 EUCOM Posture Statement*.

[70] Calder, *Embattled Garrisons*, 53.

[71] In this context, the Bush Administration refers to the Presidency of George W. Bush from 2001–2009.

[72] Michael O'Hanlon, *Unfinished Business: U.S. Overseas Military Presence in the 21st Century* (Washington DC: Center for a New American Security, 2008), 11–12.

of U.S. Air Force airfields in Europe, one additional characteristic to the definition of MOB was included: A USAFE MOB is required to be the permanent home of USAFE assigned aircraft.

Figure 2. USAFE Main Operating Bases (After Infoplease, 2011)[73]

Does USAFE's mission require five MOBs? The five main operating bases in USAFE are where the vast majority of its forces are concentrated. The MOBs represent 86 percent of USAFE's workforce and 99 percent of the permanently assigned aircraft.[74] All five MOBs are home to at least one Air

[73] "Europe," Infoplease Atlas, accessed December 30, 2011, http://www.infoplease.com/atlas/europe.html. The background map of Europe utilized for Figures 2-8 was found at the Infoplease.com atlas.

[74] 86 percent of workforce as calculated from *2010 Base Structure Report*. 99 percent of aircraft is derived from the fact that all USAFE permanently assigned aircraft are based at the five main operating bases, except one. The one exception is a C-37 assigned to Chievres Air Base, Belgium in support of SACEUR distinguished visitor airlift requirements.

Force wing, the common organizational unit that occupies an Air Force Base (both domestic and overseas). Two sets of MOBs are located within a short drive of one another: Ramstein and Spangdahlem are separated by just seventy-five miles, while Lakenheath and Mildenhall stand less than five miles apart. All five of USAFE MOBs are located in the territory of NATO members (Germany, Italy, and the United Kingdom) with whom the United States has developed extremely stable security relationships with over the past sixty-plus years. Thus, USAFE is heavily invested in the five MOBs described in this chapter. The question at issue is: Does USAFE get the most "bang for its buck" in terms of reassuring allies, deterrence, conducting operations and building partnerships by concentrating its forces at five MOBs, and really only three separate regions of Europe?

B. RAMSTEIN AIR BASE, GERMANY

A discussion of USAFE's main operating bases should correctly begin with Ramstein Air Base, Germany. Ramstein is the European base most commonly cited in other works as a main operating base.[75] Ramstein is home to USAFE Headquarters and 3d Air Force. These two organizations provide the command and control of U.S. Air Force personnel and units across Europe. Additionally, 17th Air Force, the air and space component to AFRICOM, is a third headquarters agency located at Ramstein. Finally, three USAFE wings call Ramstein home: the 86th Airlift Wing, 435th Air Ground Operations Wing and the 521st Air Mobility Operations Wing.

Located seven and a half miles west of the city of Kaiserslautern in the German state of Rheinland-Pfalz, Ramstein is considered part of the Kaiserslautern Military Community (KMC). The KMC is the largest contingent of

[75] Calder, *Embattled Garrisons*, 52 and O'Hanlon, *Unfinished Business*, 12. Both Calder and O'Hanlon cited Ramstein Air Base, Germany in their studies when providing examples for their respective definitions of a main operating base.

U.S. military members and their families located outside the Continental United States (CONUS).[76] Nearly 40,000 U.S. Army and Air Force members and their dependents call the KMC home.[77]

The 86th Airlift Wing (86 AW) is considered the host unit at Ramstein Air Base. The installation is home to 10,434 military and civilian personnel,[78] a large base by Air Force standards. Five different models of aircraft are assigned to the 86 AW, combining to make up a fleet of 28 total aircraft: 14 C-130Js, ten C-21As, two C-20Hs, one C-37 and one C-40B. As an airlift wing, the 86 AW is given the operational responsibility for conducting theater airlift, distinguished visitor transport, airdrop operations and aero medical evacuations. As Ramstein's host wing, the 86 AW is also tasked with providing quality of life services for the military members, their families, and retirees attached to the installation or in the surrounding KMC.[79]

Ramstein traces its origins back to Word War II, when it served as an airstrip for the Luftwaffe and later the U.S. Army Air Forces as the Allies advanced toward Berlin. In the post-World War II era, the Americans joined with the French to build two air bases near Kaiserslautern, which was located within France's occupation zone. Landstuhl Air Base was the first of the two airfields to open—in August of 1952. Ramstein Air Base opened the following year, on June 1, 1953. The airfield at Landstuhl later closed, but the area remains home to the Landstuhl Regional Medical Center, the largest American hospital outside the United States and the only Level I Trauma Center outside the United States.

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76 "Kaiserslautern Military Community Kaiserslautern, Germany," GlobalSecurity.org, last modified July 05, 2011, http://www.globalsecurity.org/military/facility/kaiserslautern.htm.

77 "Kaiserslautern, Germany," Military.com Installation Guide, accessed November 13, 2011, http://benefits.military.com/misc/installations/Base_Content.jsp?id=1675.

78 Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-84.

79 "86th Airlift Wing," Ramstein Air Base, accessed November 13, 2011, http://www.ramstein.af.mil/library/factsheets/factsheet.asp?id=14103.

Landstuhl Regional Medical Center has proven invaluable to the coalitions fighting in Iraq and Afghanistan, providing care for thousands of coalition combat and noncombat injuries.[80]

Since its opening in 1953, Ramstein has been home to multiple USAF and NATO headquarters from 12th Air Force in the 1950s, eventually becoming the permanent home of USAFE Headquarters in 1973. Ramstein and the 86th Wing saw their mission and assigned aircraft change periodically throughout the decades of the Cold War. F-4s, F-102s and KC-135s were just a few of the multiple types of aircraft that have called Ramstein home during this period. Following the end of the Cold War, the 86th Wing was realigned as an Airlift Wing, its current designation.

In 2005, the closure of Air Force facilities at the former Rhein-Main Air Base (currently Frankfurt Airport) as part of the $609 million Rhein-Main Transition Program expanded the airlift and cargo operations at Ramstein even further.[81] NATO funded over a third ($210 million) of this infrastructure investment at Ramstein.[82] This willingness to fund infrastructure investments at U.S. operating locations should be explored and exploited to ensure future investment costs are shared between all Allied security partners. With the completion of multiple construction projects including a new runway, widened taxiways, larger aircraft parking ramps and a new passenger terminal, Ramstein was transformed into the European Central Region's Aerial Port of Embarkation for U.S. military forces.[83] The upgrades postured Ramstein to take on

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80 David Rising, "Landstuhl Regional Medical Center Saves U.S. Military Lives in Germany," Huffington Post, September 2, 2011, accessed December 17, 2011, http://www.huffingtonpost.com/2011/09/02/landstuhl-military-hospital-germany-_n_946386.html.

81 Marni McEntee, "Rhein-Main transition program on schedule," *Stars and Stripes*, April 20, 2004, accessed November 13, 2011, http://www.stripes.com/news/rhein-main-transition-program-on-schedule-1.19018.

82 Department of Defense, *Military Construction Program FY2012 Budget, North Atlantic Treaty Organization Security Investment Program: Justification Data Submitted to Congress*, February 2011, accessed December 18, 2011, 6, http://comptroller.defense.gov/defbudget/fy2012/budget_justification/pdfs/11_NATO_Security_Investment_Program/NATO_Security_Investment_Program_FY12_J-Book.pdf.

83 "Ramstein Air Base," GlobalSecurity.org, last modified July 05, 2011, http://www.globalsecurity.org/military/facility/ramstein.htm.

70 percent of Rhein-Main's capacities as part of the Rhein-Main Transition Program, with Spangdahlem Air Base, Germany scheduled to take on the remaining 30 percent.

Ramstein is an excellent example of what Calder recognizes as a significant challenge with maintaining a forward overseas presence with periodic shifts in strategy and the security environment. Calder states, "It is far easier to change functions at existing bases than to move bases themselves."[84] This is a major reason why funding follows the path of prior investment when dealing with airfields. According to the *2010 Base Structure Report*, Ramstein's Plant Replacement Value (PRV)[85] is calculated at nearly $3.7 billion, by far the largest PRV of any USAFE airfield.[86] Add to this figure Ramstein is host to USAFE Headquarters, its close proximity to Landstuhl Regional Medical Center and other U.S. Army units in the greater KMC, its central European location for USAFE's only airlift wing, Ramstein will certainly remain a main operating base for the foreseeable future.

C. SPANGDAHLEM AIR BASE, GERMANY

Located approximately seventy-five miles to the northwest of Ramstein in the German state of Rheinland-Phalz, Spangdahlem Air Base is the second USAFE main operating bases in Germany. The 52d Fighter Wing (52 FW) is the host unit for Spangdahlem, and the base employs 4,883 military and civilian personnel.[87] For decades, Spangdahlem has been a fighter base with aircraft and personnel forces prepared to defend Europe from its central location. Today, the fighter base tradition at Spangdahlem continues as twenty-four F-16s and eighteen A-10s are assigned to the 52 FW. However, like many USAFE units the 52 FW has expanded its Cold War mission as a fight-in-place force to

84 Calder, *Embattled Garrisons*, 35.

85 Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-3. Plant Replacement Value (PRV) "represents the cost to design and replace an existing facility using current construction standards and codes."

86 Ibid., DOD-84.

87 Ibid.

an organization now prepared to deploy outside of the European theater. The F-16s and A-10s of the 52 FW are trained to support military operations through a variety of specific missions, to include the suppression of enemy air defenses, close air support, air interdiction, and combat search and rescue.[88] Over the past two decades, 52 FW aircraft and personnel have successfully deployed and flown sorties in support of combat operations in the Balkans, Iraq and Afghanistan.

Spangdahlem was built between 1951 and 1953 in the French Occupation Zone of Germany. The U.S. Air Force took ownership of the base in May of 1953 as the 10th Tactical Reconnaissance Wing moved to Spangdahlem from France. During the 1950s and 1960s, many types of aircraft flying in support of the host wing's mission operated from Spangdahlem. The 52d Tactical Fighter Wing was eventually established at Spangdahlem on December 31, 1971. Renamed the 52d Fighter Wing following substantial post-Cold War changes across the Air Force, today's existing force structure and organization of the 52 FW was principally put together during the 1990s.[89]

The Rhein-Main Transition Program brought about the most significant changes to Spangdahlem's airfield over the past twenty years. Some 30 percent of the cargo and passenger processing operation that previously took place at Rhein-Main Air Base was scheduled to transition to Spangdahlem in October of 2005. The additions at Spangdahlem included a revamped system of runways and taxiways, an aircraft parking apron capable of parking thirteen C-17s, a passenger terminal and a special underground refueling system.[90] With the transition long since complete, Spangdahlem now operates as a joint fighter-cargo airfield operation.

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88 "52nd Fighter Wing," Spangdahlem Air Base, last modified June 18, 2010, http://www.spangdahlem.af.mil/library/factsheets/factsheet.asp?id=10167.

89 "Spangdahlem Air Base," GlobalSecurity.org, last modified July 05, 2011, http://www.globalsecurity.org/military/facility/spangdahlem.htm.

90 Terry Boyd, "Spangdahlem is new center of Europe airlifts," *Stars and Stripes*, September 20, 2005, accessed November 13, 2011, http://www.stripes.com/news/spangdahlem-is-new-center-of-europe-airlifts-1.38497.

This multi-role function now in place at Spangdahlem is a positive move for USAFE's portfolio of airfields. U.S. Air Force airfields, both domestic and overseas, have historically operated under the ownership umbrella of a single Major Command.[91] With major base reductions, both domestically and overseas, occurring since the end of the Cold War many airfields have expanded their infrastructure to support multiple missions across numerous Major Commands. Some domestic airfields have encountered significant changes due to the DoD's new joint basing venture[92], an inter-service effort to save money by consolidating support services and maximizing critical infrastructure. These airfields now host missions from the Air Force and sister services. Increasing the adaptability of USAFE's airfield portfolio by constructing airfields capable of supporting a variety of aircraft (i.e., bombers, tankers, fighters, airlift assets and unmanned Intelligence, Surveillance and Reconnaissance (ISR) platforms) is one recommendation of this thesis.

D. RAF LAKENHEATH AIR BASE, UNITED KINGDOM

RAF Lakenheath Air Base is one of two USAFE main operating bases that stand less than five miles apart in Suffolk County, United Kingdom. Primarily an agricultural community, Suffolk County lies seventy to eighty miles to the northeast of London, and the county borders the North Sea to the east. Both USAFE MOBs fall in the western portion of Suffolk County.

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91 The USAF is currently organized into ten Major Commands. Within the CONUS, the Major Commands are organized along functional lines. For example, Air Mobility Command owns the airlift and air refueling aircraft assets, and Air Force Special Operations Command owns the aircraft and personnel designated for special operations missions. Overseas, USAF Major Commands are organized regionally, in alignment with the regional combatant commands established by the Unified Command Plan. USAFE and Pacific Air Forces are the two regional Major Commands located outside the Continental United States.

92 "Basing Directotate," Office of the Deputy Under Secretary of Defense (Installations and Environment), last modified November 12, 2010, http://www.acq.osd.mil/ie/basing.shtml. The 2005 Base Closure and Realignment Commission recommended the DOD pursue a joint basing program "to optimize the delivery of installation support across the services." Twelve joint bases achieved full operational capability as of October 1, 2010. Domestic USAF airfields included in this joint basing program include McChord AFB, WA; McGuire AFB, NJ; Andrews AFB, MD; Elmendorf AFB, AK; Hickam AFB, HI; Randolph AFB, TX; Charleston AFB, SC; and Langley AFB, VA.

Lakenheath's origins as an air base began as World War II broke out and the Royal Air Force looked to build "dummy airfields" to confuse German pilots. False runway lights and aircraft decoys made of plywood were set-up at the Lakenheath site to lure Luftwaffe crews away from other nearby operational RAF airfields. It proved successful as "German crews bombed or strafed RAF Lakenheath on at least five different occasions."[93] Lakenheath was quickly selected to transition to an operational, satellite airfield for RAF Mildenhall. Three runways and numerous hangars were constructed, eventually opening in November of 1941. In 1944, Lakenheath was closed for construction again upon its selection (revealed later) as a future home of USAF B-29 Superfortress heavy bombers. Equipped with increased range and bomb load, the B-29 Superfortress was extremely effective in the strategic bombing campaign against Japan, which eventually ended World War II in the Pacific theater.[94] In the very early stages of the Cold War, the B-29 served as SAC's first heavy bomber asset as it was deployed to locations throughout Europe and the Pacific.

Over the next three to four years, the runways at Lakenheath were widened and reinforced with concrete as the airfield was prepared for its new role as a SAC base. The United States hoped the B-29's atomic bomb capability would have a deterrent effect on the Soviet Union. Plans were quickly crafted, and airfields within the United Kingdom were upgraded to receive rotational B-29 aircraft. These upgrades included lengthening and widening the runway to a minimum of 8,000 feet long by 200 feet wide, the minimum dimensions required to support B-29 operations.[95]

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[93] "RAF Lakenheath, UK," GlobalSecurity.org, last modified July 05, 2011, http://www.globalsecurity.org/military/facility/lakenheath.htm.

[94] "History: B-29 Superfortress," Boeing, accessed December 17, 2011, http://www.boeing.com/history/boeing/b29.html. The B-29 Superfortress was the aircraft used to carry atomic bombs which were dropped on Hiroshima and Nagasaki, Japan in August of 1945. Japan surrendered shortly after these devastating attacks.

[95] Brian S. Gunderson, "Strategic Air Command's B-29s during the Berlin Airlift," Business Library, Spring 2007, accessed December 18, 2011, http://findarticles.com/p/articles/mi_hb3101/is_1_54/ai_n29331996/.

When the Soviets established the Berlin Blockade in June 1948, the United States responded with the Berlin Airlift and a show of force with the deployment of B-29s to European airfields. Lakenheath received its first rotation of SAC units in August of 1948. By May of 1951, the U.S. Air Force established the 3909th Air Base Group at Lakenheath and "assumed administrative control" of the base.[96] Lakenheath supported SAC's rotating fighter and bomber units through the 1950s. Lakenheath's transition from its post-World War II RAF bomber base to a forward-operating location for rotational SAC units is one example of changing missions at airfields by building additional infrastructure upon previous investments.

Lakenheath experienced another phase of changing functions at the airfield in 1960 when USAFE was forced to withdraw from France. With the French withdrawal from NATO's integrated military structure under the De Gualle presidency, the USAF was forced to relocate several wings and aircraft from France. In January 1960, Lakenheath became the home of the 48th Fighter-Bomber Wing, which moved from Chaumont Air Base, France. A multi-million dollar investment was made to modify and expand Lakenheath's infrastructure in support of three new fighter squadrons of aircraft and 2,000 additional airmen and their families.[97] During the next three decades of the Cold War, Lakenheath remained a fighter stronghold for USAFE forces.

Today, the 48th Fighter Wing (48 FW) remains the host unit for the installation. Three squadrons of F-15s totaling seventy-two fighter aircraft and one squadron of five HH-60 helicopters consider Lakenheath their home station. The *2010 Base Structure Report* lists 4,836 military and civilian personnel as assigned to the installation.[98] Lakenheath is the largest USAFE airfield in the United Kingdom in terms of PRV, estimated at over $2.2 billion.[99] Overall,

96 "RAF Lakenheath, UK," GlobalSecurity.org.

97 Ibid.

98 Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-94.

99 Ibid., AIR FORCE-21.

Lakenheath is similar in size to Spangdahlem with a nearly equivalent base population, despite hosting one more fighter squadron than Spangdahlem

The 48 FW carries an operational mission to execute counterair, counterland, and combat search and rescue operations. Over the past decade, its aircraft assets and personnel have been forward deployed to U.S. Central Command air bases in support of war efforts in both Iraq and Afghanistan. Additionally, F-15s from Lakenheath participated in Operation Unified Protector, the NATO-led mission established to respond to the unrest in Libya.[100] With the requirement of a fight-in-place force seemingly absent from USAFE's mission, the question must be asked if the 48 FW could carry out its operational mission from a domestic installation. The same question will posed of USAFE's two other fighter wings located at Spangdahlem and Aviano. One of the proposals made by this thesis is to return to a similar structure of the early Cold War era where strategic bombing assets were deployed to the European theater on a rotational basis. This proposal significantly reduces the permanent footprint assigned to these current main operating bases, reducing their classification to either a forward-operating site, cooperative-security location or other category of airfield.

E. RAF MILDENHALL AIR BASE, UNITED KINGDOM

RAF Mildenhall is the second USAFE main operating bases located in Suffolk County, United Kingdom. Mildenhall was the first of these two current MOBs built; it opened as one of the "RAF's largest bomber stations" on October 16, 1934.[101] The airfield was home to RAF Wellington, Stirling, and Lancaster bombers throughout World War II. Bombers from Mildenhall participated in

100 Patrick Dickson, "U.S. Air Force jet crashes over Libya; crewmembers safe," *Stars and Stripes*, March 22, 2011, accessed November 20, 2011, http://www.stripes.com/news/libya/u-s-air-force-jet-crashes-over-libya-crewmembers-safe-1.138511.

101 "RAF Mildenhall History," Air Force Portal, last modified June 20, 2008, https://www.my.af.mil/gcss-af/USAF/ep/contentView.do?contentType=EDITORIAL&contentId=c6925EC1860E30FB5E044080020E329A9&channelPageId=s6925EC1354EC0FB5E044080020E329A9&programId=t6925EC30D35F0FB5E044080020E329A9.

bombing raids against Nazi Germany immediately following the declaration of war in 1939 to the end of the war in 1945.

Similar to its sister air base at Lakenheath, Mildenhall served as a SAC base during the early Cold War era. Millions of dollars were to lengthen and widen the runway to 8,000 feet by 200 feet in order to support B-29 operations. SAC gained control of Mildenhall on October 1, 1951, just five months after gaining control of Lakenheath.[102] Throughout most of the 1950s, SAC fighter and bomber units transferred in and out of Mildenhall as part of SAC's Cold War rotation. However, by 1958 the runway at Mildenhall was not capable of supporting the larger, jet-powered bombers employed by SAC.[103]

The remaining decades of the Cold War witnessed Mildenhall's transition from a SAC base to a mobility hub for Military Airlift Command (MAC) within Europe. In 1959, the USAF air passenger terminal for the United Kingdom was established at Mildenhall. Two squadrons of C-130s were based at Mildenhall in 1966 as part of the 513th Troop Carrier Wing. The late 1970s and 1980s brought a strategic reconnaissance mission to Mildenhall, and with this new mission SR-71 and U-2 aircraft arrived at the airfield. The most recent organizational changes for Mildenhall came in the early 1990s as the 100th Air Refueling Wing (100 ARW) was activated in January 1992. Finally, the 352d Special Operations Group (352 SOG) transferred to Mildenhall in 1995.[104]

Today, the 100 ARW continues to serve as the host wing for Mildenhall. The base employs 3,189 military and civilian members.[105] As the sole air refueling wing in USAFE, the 100 ARW operates fifteen KC-135 aircraft. Refueling the aircraft of the U.S. and NATO partners, the 100 ARW acts as a key

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102 "RAF Mildenhall History," Air Force Portal.

103 The B-47 Stratojet and B-52 Stratofortress required longer and wider runways than the B-29 Superfortress of just a decade before.

104 "RAF Mildenhall History," Air Force Portal.

105 Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-94.

component of the "air bridge" across the Atlantic Ocean.[106] The only U.S. Air Force special operations unit located in Europe, the 352 SOG employs approximately ten MC-130 aircraft. The 352 SOG mission is to plan and execute "specialized and contingency operations using advanced aircraft, tactics and air refueling techniques to infiltrate, exfiltrate, and resupply special operations forces."[107] The unique mission set (air refueling and special operations) provided by the aircraft assets stationed at Mildenhall require this main operating base to remain until these assets are relocated within Europe or redeployed to the United States.

Mildenhall is the smallest of the five USAFE main operating bases in terms of personnel and PRV. This is primarily driven by its close proximity with Lakenheath that has resulted in the consolidation of many mission support and family support functions. For example, the medical clinic and housing office located at Lakenheath support airmen and family members from both USAFE main operating bases located in the United Kingdom. Continued consolidation of support functions is expected and should be encouraged to reduce the heavy footprint of two main operating bases located within five miles of one another.

F. AVIANO AIR BASE, ITALY

Located fifty miles northeast of Venice, Aviano is the only USAFE main operating base that was once targeted by U.S. Army Air Forces during World War II.[108] In fact, Aviano has the longest history of any of USAFE's main operating bases as a military airfield. The Italian government opened a flight

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106 "100th Air Refueling Wing," Royal Air Force Mildenhall, last modified August 15, 2008, http://www.mildenhall.af.mil/library/factsheets/factsheet.asp?id=12915. An "air bridge" links the Continental United States with a theater or multiple theaters by providing en route landing stops. The KC-135 air refueling assets of the 100 ARW expedite the transition of fighters and other aircraft along the Atlantic "air bridge" by allowing them to skip refueling stops on the ground. Air refueling support operations of the "air bridge" accelerates the delivery of aircraft, personnel and materiel to Europe, Africa, and the Central Command AOR.

107 "352nd Special Operations Group," Air Force Special Operations Command, last modified August 17, 2011, http://www.afsoc.af.mil/library/factsheets/factsheet.asp?id=224.

108 Niklaas A. Waller, *31st Fighter Wing Historian, Fifty Years of Friendship and Cooperation: A History of Aviano Air Base, 1955-2005*, February 1, 2005, 3.

training school at Aviano's airfield in 1911. It served as an operational air base for the Italian Aeronautical Corps during World War I, and then returned to its training mission between the wars. Italian and German air forces used the base during World War II until Allied forces liberated the area. The Royal Air Force later seized control of Aviano and maintained control of the field until 1947,[109] when the airfield was returned to Italian Air Force ownership.

Following the establishment of a basing rights agreement between the United States and Italy in 1954, the first significant U.S. Air Force presence arrived at Aviano. In 1955, Aviano was designated by USAFE as the priority airfield for Tactical Air Command's (TAC) rotational units, and the 7207th Air Base Squadron was moved from Germany to Aviano. Throughout the Cold War era, Aviano continued to host multiple flying units deployed to the airfield on a rotational basis. However, Aviano experienced substantial growth in the post-Cold War era.

The end of the Cold War saw significant force reductions (aircraft, personnel, and bases) within USAFE. These reductions saw many organizations deactivated and others relocated. One relocation occurred in 1992 as the 401st Fighter Wing and Sixteenth Air Force moved to Aviano from Torrejon Air Base, Spain. The following year, the Italians agreed to the permanent assignment of two squadrons of F-16s at the northern Italian air base. Italian acceptance of the two fighter squadrons was prompted by NATO's $465 million investment in Aviano's infrastructure.[110] Finally, the 603d Air Control Squadron was relocated to the base from Germany in 1994, and the 31st Fighter Wing (31 FW) replaced the 401st Fighter Wing as the host unit. In just a few years, Aviano's permanent population grew by 2,000 airmen, and the installation was named a main operating base by NATO in July 1994.[111]

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109 Waller, *A History of Aviano Air Base*, 1–4.

110 Department of Defense. *North Atlantic Treaty Organization Security Investment Program*, 5.

111 Waller, *A History of Aviano Air Base*, 5–7.

Aviano's close proximity to the Balkans proved crucial for NATO air operations in the region throughout the 1990s and early 2000s. In 1999, the 31 FW saw its forces surge to 150 aircraft and over 6,000 personnel during Operation Allied Force, a seventy-eight–day strategic bombing campaign that ended ethnic cleansing in Kosovo. Today, the air base remains home for 4,260 military and civilian members,[112] and forty-two F-16 aircraft of the 31 FW. Similar to other USAFE assigned flying squadrons, the personnel and F-16s of Aviano's 31 FW continue to support contingency operations in U.S. Central Command's area of responsibility through rotational deployments.

Aviano represents the third USAFE main operating base that hosts a fighter wing (Spangdahlem and Lakenheath are the other two). Without a direct air threat within the European theater, the necessity of maintaining three main operating bases to host three permanent fighter wings must be questioned. One proposal to investigate is the return to rotational fighter squadrons deploying to airfields within Europe similar to the concept practiced by SAC with rotational bomber and fighter units in the early stages of the Cold War.

G. RECOMMENDATIONS FOR USAFE MAIN OPERATING BASES

The five USAFE main operating bases represent the Command's largest investment and heaviest footprint. As the second column in Table 1 reflects, history's legacy holds as money does follow the path of previous investments with Air Force airfields in Europe. The U.S. Air Force has maintained a presence at all five MOBs for nearly sixty years. Constructed either before World War II or during the early stages of the Cold War, all five MOBs were selected to serve specific Cold War missions. By the end of the Cold War, these original USAF missions had changed or ended. Yet infrastructure investments enabled the MOBs to adjust in support of new missions and aircraft, and the MOBs retain their strategic relevance today.

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[112] Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-86.

MOB	ESTABLISHED (USAF)	PRV ($B)	HOST WING	# OF PERSONNEL	AIRCRAFT
RAMSTEIN	WWII Germany (June 1953)	3.7	86 AW	10,434	14 C-130 10 C-21 2 C-20 1 C-37 1 C-40
SPANGDAHLEM	1953 France (May 1953)	1.8	52 FW	4,883	24 F-16 18 A-10
LAKENHEATH	1941 UK (May 1951)	2.2	48 FW	4,836	72 F-15 5 HH-60
MILDENHALL	1934 UK (October 1951)	1.3	100 ARW	3,189	15 KC-135 10 MC-130
AVIANO	1911 Italy (February 1955)	1.5	31 FW	4,260	42 F-16

Table 1. USAFE Main Operating Bases

The expectation is USAFE's five MOBs will persist as USAFE airfields. The third column of Table 1, PRV, represents the estimated cost of replacing each MOB. Nearly $10.5 billion of infrastructure is in place at these five airfields, an enormous investment. Each MOB is equivalent to a small city with thousands of residents and extensive family support complexes. The question becomes is this entire infrastructure necessary to fulfill USAFE's current mission requirements.

For the past decade, USAFE units assigned to its main operating bases frequently forward deployed to support combat operations in Iraq and Afghanistan. Were U.S. Allies in the European theater more vulnerable when the rotational deployments to CENTCOM's theater (arguably) reduced USAFE

capability? Does a requirement still exist for the United States to maintain operational fighter squadrons in Europe to support rotational deployments to destinations outside the European theater, or can fighters located stateside support these same requirements?

NATO allies maintain some of the largest air forces in the world. The United Kingdom, France, Germany, Spain, Italy, Belgium, Denmark, the Netherlands, Norway, Turkey, and Greece all operate advanced fighter aircraft. Many of these European partners currently operate F-16 Fighting Falcon aircraft, while other allies operate the Eurofighter Typhoon or other advanced fighters. Additionally, six NATO allies are Security Cooperative Participants collaborating on the F-35 Lightning II, Joint Strike Fighter (JSF) program. The JSF is expected to be the next generation fighter, equipped with stealth technology and a host of other sophisticated technologies.[113]

With the current fighter capabilities of European allies and commitment to sustain advanced air forces, one wonders if the United States is still required to augment these forces with operational fighter wings permanently placed in Europe. Furthermore, the Cold War requirement for a fight-in-place force on the European continent no longer exists. Maintaining three tactical fighter wings on the European continent comes with a large price tag. The three fighter wings at Spangdahlem, Mildenhall, and Aviano average 4,660 personnel and a PRV of $1.8 billion per base. In comparison to lower-level installations reviewed in subsequent chapters, the investment in people and infrastructure to support a USAF stand-alone wing at a main operating base is exorbitantly high.

This thesis proposes the fighters located at Spangdahlem, Lakenheath, and Aviano be redeployed to airfields within the CONUS. Consideration should be given to rotational deployments of fighters to airfields in Europe, similar to the

[113] "The F-35 Lightning II," Joint Strike Fighter, accessed December 27, 2011, http://www.jsf.mil/index.htm. The JSF program was established as an international acquisition program from the outset. A total of eight Security Cooperative Participants, not including the United States, are involved. Six of the eight participants are European allies. They are the United Kingdom, Italy, Netherlands, Turkey, Denmark, and Norway.

rotational deployments of SAC bombers during the early years of the Cold War. Where the SAC bomber deployments were largely a show of force exercise to reassure allies of U.S. commitment and deter Soviet aggression, the twenty-first century rotational deployment of fighters would be to assist in training and building the partnership capacity of NATO allies. When crises and conflicts warrant fighter support of combat operations, rotational deployments could support these requirements as well.

This measure would enable these three main operating bases to be reconfigured to support the rotational deployments of fighters and other aircraft to Europe. The airfields can be transformed from a main operating base to lower level installations, like forward-operating sites or a cooperative security locations. Forward-operating sites like Fairford, Incirlik, and Morón are maintained in "warm" status with the ability to expand in support of specific training events and contingencies. Cooperative security locations are operated with significant support from the host nation or NATO Alliance, allowing the U.S. footprint at these airfields to substantially reduced. The next chapters will demonstrate how infrastructure costs are significantly smaller at lower-level installations.

III. FORWARD-OPERATING SITES

A. INTRODUCTION

Technological developments now allow the U.S. Air Force to conduct many of its core functions from airfields and installations within the CONUS. For example, B-1, B-2, and B-52 aircraft, with air refueling assistance from the USAF tanker fleet, are able to conduct precision strikes in any corner of the globe. Strategic airlift assets are launched daily from CONUS airfields to deliver personnel and supplies around the world. Satellite links enable operators at locations within the United States to control unmanned systems flying over Afghanistan as part of the globally integrated ISR network. Technology has definitely made the world smaller.

Blaker points out the United States often abandoned parts of its overseas basing system when, particularly through technological advances, "sites appeared at the time to be redundant and not worth the cost of maintaining."[114] This calculus would work if every base site were a MOB. However, alternatives to multi-billion dollar main operating bases do exist, and one alternative is referred to as a forward-operating site.

Forward-operating sites are often characterized as being in a "warm"[115] status or identified as a "bare-bones"[116] facility. A small, permanent U.S. Air Force presence is maintained at these airfields, which generally takes the form of airmen providing support through a variety of different functions (i.e., security, medical, family services). The American population, airmen and their families, is typically 10 percent to 20 percent of is the total stationed at MOBs. Zero aircraft are permanently assigned to these locations. However, forward-operating sites have the capacity to expand in support of larger, rotational forces. Three USAFE

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[114] Blaker, *Anatomy of the Dilemma*, 34.

[115] Jim Garamone, "Jones Says Changes to U.S. Posture Will Strengthen Europe," American Forces Press Service, September 24, 2004, accessed November 23, 2011, http://www.defense.gov/news/newsarticle.aspx?id=25214.

[116] Calder, *Embattled Garrisons*, 53.

airfields meet the criteria of a forward-operating site: RAF Fairford Air Base, United Kingdom; Incirlik Air Base, Turkey; and Morón Air Base, Spain.

This chapter explores the infrastructure, past and present, and capabilities presented at USAFE's three forward-operating sites, depicted in Figure 3. It provides good case-study evidence that increasing the number of FOS—principally by converting other bases—will give USAFE the capability and the flexibility to meet its strategic mission requirements at lower costs.

Figure 3. USAFE Forward-Operating Sites (After Infoplease, 2011)

B. RAF FAIRFORD AIR BASE, UNITED KINGDOM

Located approximately ninety miles due west of London, RAF Fairford was constructed in 1944 to support the Allies' pending D-Day invasion.[117] Much like

[117] "RAF Fairford, UK," GlobalSecurity.org, last modified July 24, 2011, http://www.globalsecurity.org/wmd/facility/fairford.htm.

Lakenheath and Mildenhall, Fairford became a SAC base in the early stages of the Cold War. In 1950, the installation was transferred to U.S. Air Force control with the intent of establishing strategic bomber operations at the air base. Where the runways at Lakenheath and Mildenhall were built to B-29 requirements, the runway at Fairford in 1950 was designed for the long range bomber operations. In support of the larger bombers like the B-36, B-47 and B-52, the runway was extended to a length of 10,000 feet and a width of 300 feet. The SAC mission at Fairford remained until the 1970s, at which point the airfield was chosen to be the British flight test center for the Concorde supersonic airliner.[118] The USAF returned to Fairford during the 1980s with KC-135 aircraft, only to leave again in the 1990s. In 1990, Fairford was declared to be in "standby status."[119]

"Standby status" does not mean "idle." Fairford has played a vital role in numerous combat operations over the past two decades. American bombers (B-52 and B-1 aircraft) and KC-135 aircraft have deployed to Fairford in support of nearly every major combat operation since 1990. Fairford's expansive capacity is highlighted by the 1999 deployment of thirteen B-52s, five B-1s, and five KC-135s in support of NATO's Operation Allied Force.[120] Additionally, Fairford boasts the capability to provide "sixty parking spaces for bombers or other aircraft, and secured hangar space for three B-2s, … and lodging for up to 900 additional personnel."[121] In 2002, a $100 million upgrade to Fairford's runway and fuel systems was completed. Reinforcing the benefits of alliance in maintaining critical infrastructure, this project was funded by NATO.

The host unit at Fairford is the 420th Air Base Squadron (420 ABS). The base is home to 218 military and civilian personnel,[122] providing a wide range of

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118 "RAF Fairford," MilitaryBases.com, accessed November 23, 2011, http://militarybases.com/overseas/united-kingdom/fairford/.

119 "RAF Fairford, UK," GlobalSecurity.org.

120 Ibid.

121 "420th Air Base Group, RAF Fairford, United Kingdom," 501st Combat Support Wing, last modified May 4, 2011, http://www.501csw.usafe.af.mil/factsheets/factsheet.asp?id=14711.

122 Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-94.

support to rotational forces deployed to the airfield. Fairford is considered USAFE's only forward operating location for U.S. Air Force bombers.

In comparison to the two USAFE main operating bases located in the United Kingdom (Lakenheath and Mildenhall), the PRV for Fairford is estimated at $0.6 billion. This total is less than half of Mildenhall's infrastructure investment, and it is almost a quarter of Lakenheath's PRV. As a forward-operating site, Fairford does not have aircraft permanently assigned to the airfield, which substantially reduces the total number of personnel permanently assigned to the installation. With a much smaller population to support, USAFE provides significantly less family support services. Located in a well-developed ally like the United Kingdom, Fairford's American population is able to rely heavily on the family support services of the local community surrounding the installation.

While Fairford has historically hosted USAF bombers, forward-operating sites within USAFE's AOR, today and into tomorrow, should be designed to host a wide variety of aircraft assets. The twenty-first century security environment demands maximum flexibility, including installation adaptability. With an existing capacity to park sixty bombers or other aircraft and a long, wide runway, adjustments to Fairford's massive airfield infrastructure to support a variety of airframes would likely not be an expensive endeavor. Moreover, additions to Fairford's relatively small, permanent workforce would not be expected.

C. INCIRLIK AIR BASE, TURKEY

Incirlik Air Base is by far the largest of the three USAFE forward-operating sites in terms of personnel assigned. It is reported 1,528 military and civilian members[123] are assigned to the installation. The 39th Air Base Wing (39 ABW) is the host unit at Incirlik Air Base. An additional 200 to 300 contractors assist in supporting the services provided by the 39 ABW as part of the Turkey-Spain Base Maintenance Contract, which is discussed in further detail in the next

123 "Incirlik Air Base," MilitaryBases.com, accessed November 23, 2011, http://militarybases.com/overseas/turkey/incirlik/.

section. Located just outside the southern Turkish city of Adana, Incirlik provides the U.S. a strategically important presence and forward-operating site just north of Iraq and adjacent to the Levant region.

Built by the U.S. Engineering Group, Incirlik opened in February of 1955 with the relocation and activation of the 7216th Air Base Squadron from Wheelus Field, Libya to Incirlik.[124] Initially intended as a forward staging base for SAC's medium and heavy bombers, Incirlik is better known for the U-2 reconnaissance missions that operated from the airfield during the 1950s. During the 1970s, the base's critically important association with NATO security responsibilities enabled Incirlik to survive the Turkish demand to close all American military bases inside its borders. (This demand was in response to the U.S. imposed arms embargo that followed Turkey's invasion of Cyprus. By 1980, normal relations were re-established with Turkey, and multiple types of fighters and other aircraft were based at Incirlik through the next decade.)[125]

Despite occasional difficulties relating to political negotiations between the United States and Turkey,[126] Incirlik played a vital role for the U.S. Air Force in support of operations in Central Command's AOR over the past two decades. During Operation Desert Storm more than 4,600 combat sorties were launched from this southern Turkish airfield.[127] For a twelve-year period between 1991 and 2003, American fighters flew from Incirlik in support of Operation Northern Watch. During the past decade, it has continued to be a strategically important airfield location as USAF aircrews have flown thousands of sorties in support of

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124 "Incirlik Air Base," GlobalSecurity.org, last modified July 5, 2011, http://www.globalsecurity.org/military/facility/incirlik-history.htm.

125 Ibid.

126 One example of strained political relations between Turkey and the United States occurred prior to the 2003 American invasion of Iraq. Government elites from Turkey and the United States vehemently negotiated basing rights in support of the planned U.S.-led invasion. The United States military strategy included the establishment of a northern front in Iraq. Therefore, the United States requested to place 62,000 Army soldiers of the 4th Infantry Division in Turkey to launch a portion of the invasion into northern Iraq. On 1 March 2003, the Turkish Grand National Assembly ultimately denied the request. This denial dealt the United States a major pre-war defeat and required significant planning adjustments in a short period of time.

127 "Incirlik Air Base," GlobalSecurity.org.

Operation Enduring Freedom (Afghanistan) and Operation Iraqi Freedom from Incirlik. KC-135s and C-17s generated from Incirlik have been flying missions into Iraq and Afghanistan for many years.[128]

Incirlik's changing role from a fighter base to a mobility hub over the past two decades serves as an excellent example of how forward-operating sites can provide mission flexibility for USAFE operations. Incirlik's airfield infrastructure includes a runway built for SAC's long-range bombers (10,000 feet long by 300 feet wide), fifty-seven hardened aircraft shelters, and adequate parking and fueling systems for strategic air mobility assets. Due to its location near the volatile Middle East and close proximity to Iran, Incirlik remains a key FOS for USAFE and military operations at large.

D. MORÓN AIR BASE, SPAIN

The 496th Air Base Squadron (496 ABS) is the host USAF unit at Morón Air Base, Spain. A sub-organization of the 86th Operations Group at Ramstein Air Base, the 496 ABS is responsible for a wide array of support services for squadron members permanently assigned to Morón and the numerous aircraft and airmen that transit the installation every year. Approximately 138 military and civilian personnel are assigned to the base,[129] with assignments to Morón ranging from fifteen to twenty-four months in duration dependent on accompanied or unaccompanied status. An additional 320 contractors assist in supporting the day-to-day operations at Morón.[130] The contractors at Morón are part of Vinnell, Brown & Root LLC (VBR), to which USAFE awarded a four-and-a-half-year, $335 million contract in January 2010. Under the Turkey-Spain Base Maintenance Contract, VBR is tasked to provide "program management, civil

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128 Kent Harris, "U.S. mulls alternatives to Manas Air Base," *Stars and Stripes*, February 8, 2009, accessed November 23, 2011, http://www.stripes.com/news/u-s-mulls-alternatives-to-manas-air-base-1.87938.

129 Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-93.

130 "Moron Air Base, Spain," GlobalSecurity.org, last modified July 5, 2011, http://www.globalsecurity.org/military/facility/moron.htm.

engineering, base services, logistics support, air terminal and ground handling, postal services and communications, occupational health/industrial hygiene and ambulance services" at locations in Turkey and Spain.[131]

The 496 ABS was established at Morón in July of 1994, but the U.S. Air Force's presence at the installation extends back to September 1953, when negotiations pertaining to Spanish-American air bases were finalized. Construction at the base had started in 1940 by Spanish forces, but USAF forces did not arrive until the late 1950s. A total of three major air bases and two minor air bases were constructed in Spain for the USAF. By the end of the decade, 6,000 American airmen were serving in Spain. Sandars estimates nearly $267 million was spent on the construction of the five U.S. airfields in Spain from 1953 to 1963.[132] Morón, like the other two major air bases constructed at Zaragoza and Torrejon, was originally designed for SAC's long-range bombers. Rotational SAC forces initially utilized all three bases. Morón was downgraded to a "modified caretaker status" in November 1971,[133] and it has remained a "standby" base ever since.

Located in the southwest tip of Spain, Morón's infrastructure includes an in-ground aircraft refueling system, parking aprons capable of supporting twenty C-5s and temporary lodging facilities capable of housing 1,000 airmen. The USAF has put Morón's infrastructure to use time-and-time again during the past twenty years. In 1991, the base hosted twenty-four B-52s, 3 KC-135s and more than 2,800 personnel in support of Operation Desert Storm. The 92nd Air Expeditionary Wing, the "largest Tanker Wing since the Vietnam War," was temporarily established at Morón in support of Operation Allied Force in February 1999. During this period, thirty-seven tankers (KC-135 and KC-10 aircraft) and

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131 "Northrop Grumman Awarded $335 Million Base Operations Contract," Northrop Grumman—News Releases, January 27, 2010, accessed November 25, 2011, http://www.irconnect.com/noc/press/pages/news_releases.html?d=182816.

132 Sandars, *Leasehold Empire*, 250-251. Torrejon near Madrid, Zaragoza and Morón were the three major air bases constructed. The two minor air bases built for the USAF in Spain were San Pueblo near Seville and Reus near Barcelona.

133 "Moron Air Base, Spain," GlobalSecurity.org.

more than 800 personnel were based at this vital forward-operating site.[134] Over the past decade, USAF aircraft flying to/from the United States and the Central Command's AOR frequently transition through Morón. Finally, as recently as the spring and summer of this year, Morón was utilized as a staging base for KC-135 aircraft[135] flying in support of Operation Unified Protector.

Recent history shows Morón has the flexibility to expand in support of both bombers and tankers, depending on USAFE mission requirements. Morón serves as an excellent model for infrastructure investment and base support operations desired of a forward-operating site. Like Fairford and Incirlik, Morón's airfield infrastructure should be maximized to support as wide a variety of aircraft missions as possible (i.e., fighters, ISR platforms, command and control assets).

E. RECOMMENDATIONS FOR FORWARD-OPERATING SITES

In these times of tremendous budget cuts and constraints, it may seem odd to recommend growth within USAFE's airfield portfolio. However, FOS installations provide USAFE opportunities to respond to a wide spectrum of crises, exactly what the twenty-first century security environment requires. As such, the United States would do well not just to maintain the FOS that it currently has in Europe but to increase their number in the name of strategic and economic efficiency.

All three USAFE main operating bases that host fighter wings could be easily converted to forward-operating sites. This conversion would require the divestment of millions of dollars of infrastructure and the reduction of thousands of permanently assigned airmen assigned to the three MOBs. Considering that the three MOBs in question are all located within the territory of NATO allies with well-developed air forces, reductions in infrastructure and personnel by USAFE

134 "Moron Air Base, Spain," GlobalSecurity.org.

135 Amy McCullough, "The Libya Mission," airforce-magazine.com, August 2011, vol. 94, no. 8, accessed November 25, 2011, http://www.airforce-magazine.com/MagazineArchive/Pages/2011/August%202011/0811mission.aspx.

may invite growth by these NATO allies at the airfields in questions. Such growth could quickly translate into increased training opportunities and capacity building.

Of course, some streamlining in the FOS would help, as well. A snapshot of the information listed in Table 2 highlights the disparity between Incirlik and the other two USAFE forward-operating sites. Opportunities to reduce Incirlik's large workforce and footprint should be investigated as USAFE's airfield portfolio is evaluated for future posturing. The PRV associated with Incirlik's infrastructure is higher than all USAFE airfields with the exception of two main operating bases, Ramstein and Lakenheath. Incirlik's employee population of 1,528 airmen is more aligned with the base populations found at USAFE main operating bases. This total is nearly ten times the base populations found at the two other USAFE forward-operating sites. The difference in the size of the base populations explains the significant difference in the PRV associated with each installation, and Incirlik is the only airfield of the three FOS with base support operations organized under an air base wing.

FOS	ESTABLISHED (USAF)	PRV ($B)	HOST UNIT	# OF PERSONNEL	AIRCRAFT
FAIRFORD	1944 UK (1950)	0.6	420 ABS	218	Bombers
INCIRLIK	1951 USA (February 1955)	1.9	39 ABW	1,528	Fighters Airlift
MORÓN	1940 Spain (September 1953)	0.5	496 ABS	138	Bombers Tankers

Table 2. USAFE Forward-Operating Sites

Both Fairford and Morón support functions are organized under air base squadrons. While Turkey is a NATO ally, it is also a Muslim country with considerable cultural differences from the United States. These cultural differences require greater investments in family support services than the other two FOS. The question is whether opportunities exist to partner with Turkey or other NATO allies to provide base support functions at Incirlik (and other NATO airfields), allowing USAFE to shrink its permanent presence, footprint, and cost.

IV. COOPERATIVE-SECURITY LOCATIONS

A. INTRODUCTION

Europe remains an extremely important region for the United States, politically, economically and militarily. The vast majority of European nations share a common bond with the United States in promoting democracy, free markets and open societies.[136] The European Union (EU), "a unique economic and political partnership between twenty-seven European countries,"[137] has deep economic ties with the U.S. Derek E. Mix, an analyst in European affairs for the Congressional Research Service, identified the U.S.-EU economic relationship as the "largest trade and investment relationship in the world…comprising more than half of global gross domestic product."[138] Militarily, the U.S. has partnered with a growing number of European nations (and Canada) since the end of World War II to form NATO, the world's "preeminent security institution." These strong ties with Europe present USAFE with an opportunity to leverage the existing cooperation between the United States and Europe to diversify and add flexibility into its airfield portfolio. Cooperative-security locations (CSL) will enable USAFE to diversify and add flexibility with minimal investment by the United States.

A CSL is defined by the DoD as "a facility located outside the United States and U.S. territories with little or no permanent U.S. presence, maintained with periodic Service, contractor, or host-nation support."[139] CSLs provide U.S. forces access for security cooperation activities and contingencies. Calder adds CSLs are "mainly located in 'arc-of-instability' nations,"[140] which appears to follow

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[136] Derek E. Mix, "The United States and Europe: Current Issues," Congressional Research Service, June 20, 2011, 1.

[137] "Basic information on the European Union," Europa: Gateway to the European Union, accessed October 16, 2011, http://europa.eu/about-eu/basic-information/index_en.htm.

[138] Mix, "The United States and Europe," 6.

[139] "Cooperative Security Location," Defense Technical Information Center Online: Definitions, accessed November 25, 2011, http://www.dtic.mil/doctrine/jel/doddict/data/c/18918.html.

[140] Calder, *Embattled Garrisons*, 53.

the DoD's practice for establishing CSLs. Hebert cites examples of CSLs as the airfields at Dakar, Senegal; Entebbe, Uganda; and Libreville, Gabon.[141] Several other resources only identified CSLs in Latin America and Africa.

Do airfields that operate as cooperative-security locations even exist within the European AOR? Following the definition of a CSL above, this question is difficult to answer in regard to USAFE airfields. Europe is not considered part of the "arc-of-instability," yet USAFE forces frequently operate from airfields with little or no permanent U.S. presence in support of training exercises or contingency operations. One could argue that every airfield within the territory of a NATO ally is a possible CSL since the transatlantic alliance is built on the pillars of collective defense, crisis management, and cooperative security.[142] As previously noted, the permanent presence of USAFE personnel, aircraft or materiel is a necessary characteristic for an airfield to be considered part of the USAFE portfolio. Therefore, for an airfield to qualify as a CSL, at least a small, permanent U.S. presence must be established at the installation.

Figure 4 displays the six USAFE cooperative-security locations identified are all controlled and operated by the host nation, NATO ally. The host nation of each CSL provides all airfield support functions (i.e., air traffic control and airport security). The U.S. presence consists of personnel integrated into NATO's operational wing located at the installation, or a munitions support squadron collocated with a nuclear-capable fighter wing of a NATO ally. Airfields operating as CSLs, especially those operating in support of NATO's integrated flying wings, offer an excellent model for USAFE's twenty-first–century forward posture. Western European nations are well-developed, stable democracies with extremely capable air forces of their own. Greater reliance and partnership with host nations should be welcomed in parallel efforts to build partner capacity and reduce U.S. costs.

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[141] Hebert, "Presence, Not Permanence."

[142] North Atlantic Treaty Organization Public Diplomacy Division, "What Is NATO? An Introduction to the transatlantic Alliance," accessed November 25, 2011, 7, http://www.nato.int/welcome/brochure_WhatIsNATO_en.pdf.

Figure 4. USAFE Cooperative-Security Locations (After Infoplease, 2011)

B. NATO'S INTEGRATED OPERATIONAL WINGS

Within the past thirty years, NATO has established two multinational flying organizations in order to provide the Alliance with a specific capability. The E-3A Component[143] was established at Geilenkirchen, Germany, to provide an airborne early warning capability, greatly enhancing air defense. Recently, a strategic airlift capability was produced with the establishment of the Heavy Airlift Wing (HAW) at Papa Airfield, Hungary. Both multi-national organizations are explored in detail below.

[143] The NATO term "Component" in this sense is equivalent to a U.S. Air Force Wing.

1. NATO Air Base Geilenkirchen, Germany

The British Royal Air Force first built an air base at Geilenkirchen in 1951. At the time, this section of northwest Germany fell within the United Kingdom's occupation sector. In March 1968, the British returned the base to German control. Later that same year, the German Air Force moved a Missile Wing to Geilenkirchen. In 1980, the German Missile Wing was relocated as construction began to prepare for the arrival of NATO's Airborne Early Warning Force and its E-3A aircraft.

Today, the air base in Geilenkirchen, Germany, is home to NATO's E-3A Component. Activated in 1982, the E-3A Component was NATO's first integrated, multi-national flying unit. The organization is comprised of more than 2,900 military and civilian members from seventeen NATO nations.[144] Seventeen E-3A aircraft are assigned to the E-3A Component at Geilenkirchen, and fully integrated, multinational crews representing all seventeen participating nations operate the aircraft.

The United States is one of the larger elements of the E-3A Component at Geilenkirchen. Currently, the United States represents approximately 20 percent of the installation's workforce. The 569 Americans employed at the airfield have two primary functions.[145] The airmen of the 470th Air Base Squadron (470 ABS) supply the majority of family support functions (i.e., child development center, medical, education services, and legal) located at the air base. The remaining portions of the workforce are the aircrew members and maintainers embedded within the command structure of the E-3A integrated multi-national organization. The U.S. share of the workforce does not appear to be out of line or imbalanced. However, this division of labor and responsibilities should be closely monitored and scrutinized due to the on-going financial crisis in Europe to ensure the burden for U.S. airmen does not dramatically increase.

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[144] "NATO Airborne Early Warning & Control Force: E-3A Component," North Atlantic Treaty Organization, last modified December 28, 2011, http://www.e3a.nato.int/eng/home.htm.

[145] Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-82.

The E-3A Component now has a twenty-five-year history of successful support to military operations and humanitarian relief efforts within Europe and around the globe.[146] The air base at Geilenkirchen and the E-3A Component represent a true collaborative effort among the seventeen participating NATO nations. Its organization, infrastructure and funding mechanism should be studied in an effort to produce other integrated multi-national units and airfields. The United States and USAFE should encourage NATO to explore similar efforts.

2. Papa Airfield, Hungary

The Heavy Airlift Wing located at Papa Airfield in Hungary is the second multi-national flying organization established by NATO. Since 2006, several NATO nations worked to establish a strategic airlift capability within the Alliance. Papa Airfield was selected to be the main operating base for the future HAW in 2007, and an initial memorandum of understanding was signed in 2008. Today, twelve nations participate in the organizational structure of the HAW, and they operate three C-17 aircraft.

Originally built in 1936, Papa Airfield has a long history as a military airfield. Like many of the U.S. airfields in Europe during the Cold War, Papa Airfield experienced frequent mission changes. New technology and strategy adjustments resulted in new investments in the airfield's infrastructure.[147]

The total population, HAW personnel and family members, at Papa Airfield is just over 600 personnel. Exact numbers for the USAF element were not identified, but the total number of Americans assigned to Papa Airfield is thought to be relatively small. Where Geilenkirchen employed a full squadron (470 ABS)

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[146] "The E-3A Component's Operations," North Atlantic Treaty Organization, accessed December 20, 2011, http://www.e3a.nato.int/eng/html/organizations/operations.htm. The E-3A Component has generated aircraft in support of operations in Iraq (1990–1991, 2003), Libya (1992, 2011), and the Balkans (1992–1994); in response to the terrorist attacks in the United States (2001-2002), and for counter-terrorist activities over Europe (2001–2010).

[147] "History of the base," Heavy Airlift Wing, accessed December 20, 2011, http://www.heavyairliftwing.org/library/papa-air-base.

of approximately 150 members to carry out family support functions, only six individuals are employed at Papa Airfield for similar mission support responsibilities.[148] An increased reliance on the local community and reachback capabilities to fulfill mission support functions has been initially set up for Americans assigned to this new multi-national endeavor. The HAW organization warrants periodic evaluation to identify if this lean structure is working.

C. USAFE MUNITIONS SUPPORT SQUADRONS (MUNSS)

Another type of CSL airfield within the European AOR involves a specialized military capability that the United States provides. With nuclear weapons remaining as a portion of NATO's arsenal, the United States continues to supply focused support to the non-strategic nuclear weapons positioned on the continent. These four airfields offer an alternative CSL model in which the United States is tasked to provide assistance and expertise for a unique task or mission set. The spotlight of the current version of this particular CSL model shines brightly on the deployment of nuclear weapons within Europe. Do not let this controversial subject obscure this version of the CSL model employed by the United States in Europe. Future CSL airfields following this model could be organized around other mission support tasks like air traffic control or cargo operations (especially if the host nation capacity pertaining to a specific task is lacking).

Currently, the 38th Munitions Maintenance Group (38 MMG) based at Spangdahlem is believed to hold the responsibility of maintaining the arsenal of Pre-positioned non-strategic nuclear weapons. This critical responsibility of the 38 MMG could not be confirmed by any sources used during the research of this project. However, the 38 MMG is the command echelon above four geographically separated munitions support squadrons located at four NATO fighter installations: Kleine Brogel Air Base, Belgium; Büchel Air Base, Germany;

[148] "Newcomer's Guide: United States Air Force version," Heavy Airlift Wing, Version 2011.1, November 18, 2011, accessed December 29, 2011, http://www.heavyairliftwing.org/library/nations/THE%20Newcomers%20Guide%202011.pdf.

Ghedi Torre Air Base, Italy; and Volkel Air Base, Netherlands. It is assumed the four geographically separated squadrons are collocated with these nuclear-capable fighter wings to specifically support the non-strategic nuclear weapons deployed to each location. Details pertaining to the four munitions support squadrons located at each of these NATO airfields are summarized below.

1. Kleine Brogel Air Base, Belgium

Kleine Brogel Air Base was first opened by the Belgian Air Force in March 1945. Through most of the Cold War, Kleine Brogel was home to Belgian fighters sitting alert in preparation to defend Western Europe from a Soviet advance. Today, the Belgian Air Force operates F-16s from the installation.[149] USAFE's 701st Munitions Support Squadron (701 MUNSS) also considers Kleine Brogel home. The *2010 Base Structure Report* indicates 137 U.S. employees are assigned to the installation.[150] In 2005, Hans M. Kristensen of the Natural Resources Defense Council, an environmental action group, reported the Belgian Air Force installation stores twenty B61 nuclear bombs for delivery by Belgian F-16s.[151]

2. Büchel Air Base, Germany

A main operating base for the Luftwaffe (German Air Force), Büchel Air Base is home to the German 33d Fighter Bomber Wing. The airfield was originally built in the post-World War II era by French occupation forces.[152] Today, the Luftwaffe operates PA-200 Tornado aircraft from the airfield, and they share the installation with USAFE's 702d Munitions Support Squadron (702

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149 "Dossier: Kleine Brogel," Friends of the Earth: Flanders & Brussels, accessed November 26, 2011, http://www.motherearth.org/nuke/dossierkb.php.

150 Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-80.

151 Hans M. Kristensen, "U.S. Nuclear Weapons in Europe," Natural Resources Defense Council (February 2005): 84.

152 "Buchel," Wikipedia, last modified November 7, 2011, http://en.wikipedia.org/wiki/B%C3%BCchel.

MUNSS). The German Air Force base is home to 137 U.S. personnel.[153] Numerous sources suggest twenty B61 nuclear bombs continue to be housed at the airfield. These nuclear bombs are maintained by the 702 MUNSS, and they are to be delivered by the German Tornado aircraft.[154]

3. Ghedi Torre Air Base, Italy

Located in northern Italy, Ghedi Torre Air Base is considered a main operating base of the Italian Air Force. The Italian Air Force's 6th Wing operates PA-200 Tornado aircraft from the installation. While an exact date of when the airfield was originally constructed was not discovered, initial USAF presence at Ghedi Torre was reported in 1963 with the first MUNSS unit being assigned to the air base.[155] Today, in addition to the Italian Air Forces located at Ghedi Torre, USAFE's 704th Munitions Support Squadron (704 MUNSS) is stationed at the airfield. Some 140 U.S. military and civilian members are assigned to the installation.[156] Kristensen's 2005 report suggests forty B61 nuclear bombs are stored at Ghedi Torre, and the base-assigned Italian Air Force Tornadoes are the expected delivery vehicles for the bombs.[157]

4. Volkel Air Base, Netherlands

In 1941, German occupation forces built Volkel Air Base in the Netherlands. It came under the control of the Royal Netherlands Air Force (RNLAF) in 1950, and the first USAF presence is reported to have arrived at the installation in the 1960s.[158] Today, Volkel is one of three main operating bases

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153 Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-81.

154 Kristensen, "Nuclear Weapons in Europe," 81.

155 "Nuclear Information: US nuclear weapons in Europe," Friends of the Earth: Flanders & Brussels, accessed November 26, 2011, http://www.motherearth.org/nuke/info3.php.

156 Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-86. Ghedi Torre Air Base is categorized as Ghedi Radio Relay Site in the 2010 Base Structure Report.

157 Kristensen, "Nuclear Weapons in Europe," 81.

158 "Nuclear Information: US nuclear weapons in Europe," Friends of the Earth.

for the Royal Netherlands Air Force, and it is home to three squadrons of Dutch F-16s. The Dutch Air Base is home to 142 U.S. personnel and the 703d Munitions Support Squadron (703 MUNSS) is USAFE's permanent presence at the airfield.[159] Volkel is believed to house twenty B61 nuclear bombs to be delivered by Dutch F-16s as part of NATO's nuclear strike force.[160]

D. RECOMMENDATIONS FOR USAFE COOPERATIVE-SECURITY LOCATIONS

Two distinct types of Cooperative-Security Locations have been identified through this analysis. First, the United States participation in NATO's multi-national flying organizations produces two current CSLs within Europe. Gelienkirchen's E-3A Component and the Heavy Airlift Wing located at Papa Airfield in Hungary reflect NATO's ongoing commitment to collective defense. Both organizations provide a unique capability (airborne command and control, and strategic airlift) for the Alliance in support of operations within the European theater and around the world. The United States should advocate for additional NATO integrated wings to follow in the footsteps of the E-3A Component at Geilenkirchen and HAW at Papa Airfield. Within the European AOR where the NATO Alliance continues to expand, this CSL model appears promising in the parallel efforts to build partnership capacity and to reduce U.S. costs.

The USAF presence at Papa Airfield exemplifies a twenty-first-century approach with greater reliance on the host nation military and local communities for support. Consider the substantial difference in "# of personnel" (Table 3) assigned to Geilenkirchen in comparison to the workforce at Papa Airfield. Americans assigned to the HAW will not find the family support structure that is commonplace among U.S.-run bases around the globe. Instead, HAW personnel will partner with local communities within Hungary and rely on reachback capabilities to other USAFE main operating bases like Ramstein and Aviano for

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[159] Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-90. Volkel Air Base is captured under "Other Sites" within the Netherlands.

[160] Kristensen, "Nuclear Weapons in Europe," 88.

support. If successful, Geilenkirchen and other USAFE airfields with larger family support infrastructures (i.e., MOBs and FOSs) will likely follow suit.

CSL	ESTABLISHED (USAF)	PRV ($B)	HOST UNIT	# OF PERSONNEL	AIRCRAFT
GEILENKIRCHEN	1951 UK (1982)	0.050	NATO	569	E-3
PAPA	1936 Hungary (2008)		NATO	<100	C-17
KLEINE BROGEL	1945 Belgium (1960s)	0.014	Belgium	137	F-16
BÜCHEL	Post-WWII France (1960s)	0.019	Germany	137	PA-200
GHEDI TORRE	Italy (1960s)	0.024	Italy	140	PA-200
VOLKEL	1941 Germany (1960s)	0.005	Netherlands	142	F-16

Table 3. USAFE Cooperative-Security Locations

The second set of USAFE Cooperative-Security Locations is the result of a highly specialized task owned by the United States within the NATO Alliance. Four munitions support squadrons are collocated with the nuclear-capable fighter wings of four host nations. As Table 3 shows, USAF infrastructure commitments (reflected by PRV) and personnel assigned are comparable at these four locations. USAFE will retain this responsibility as long as the Heads of State of NATO nations determine non-strategic nuclear weapons will remain in Europe.

Based on the political climate across many NATO nations and increased pressure to remove non-strategic nuclear weapons from European soil,[161] reductions or a complete cut of this requirement are expected in the future.

While the four MUNSS units may disappear, the CSL model, centered on USAFE supplying personnel and infrastructure in support of specialized tasks, provides other opportunities for the United States to consider. Since the end of the Cold War, NATO has expanded by twelve members, many of which were ex-Soviet bloc countries. The democracies of these new NATO members are less mature, and their militaries are significantly smaller than the NATO allies of western Europe.[162] USAFE should be prepared for opportunities to establish task-specific CSLs within the borders of these new NATO Allies. The United States stands to benefit from the creation of additional CSLs through strengthened partnerships and increased access to areas once considered enemy territory.

[161] "212 DSCFC 10 E rev 1—U.S. Non-Strategic Nuclear Weapons in Europe: A Fundamental NATO Debate," NATO Parliamentary Assembly, accessed December 20, 2011, http://www.nato-pa.int/default.asp?SHORTCUT=2083.

[162] NATO, Introduction to NATO, The new twelve NATO members are: The Czech Republic, Hungary, Poland, Bulgaria, Estonia, Latvia, Lithuania, Romania, Slovakia, Slovenia, Albania and Croatia. None of the twelve countries rank near the top globally in personnel strength, weapons systems or spending. Only Poland is listed in GlobalFirepower.com top fifty world military powers. Poland is ranked twenty-first on this list.

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V. JOINT PRE-POSITION SITES

A. INTRODUCTION

> *These facilities are set up as large storehouses where incoming units can quickly pick up equipment without being compelled to rely on scarce airlift capabilities, "capitalizing on the strategic advantage of being an 'ocean closer' to engagement, conflict, and influence."*[163]

This definition of joint pre-position sites (JPS) is derived from Calder's book, *Embattled Garrisons*. The vast majority of U.S. Pre-positioned equipment belongs to its ground forces, both Army and Marines. However, the U.S. Air Force does have Pre-positioned equipment, commonly referred to as war reserve materiel (WRM). U.S. Air Force WRM includes a variety of equipment ranging from expeditionary airfield equipment, medical equipment, vehicles and munitions.

Gone are the days where USAFE WRM was pre-positioned at numerous collocated operating bases of NATO allies. During the Cold War, these bases were "stockpiled with equipment and munitions to provide a reception base to support deploying forces into Europe."[164] Today, USAFE's WRM stockpiles are significantly reduced, and just three joint pre-position sites remain: one at Sanem, Luxembourg, and two airfields in Norway.

The 86th Materiel Maintenance Squadron (86 MMS) at Ramstein is responsible for the oversight of USAFE's WRM assets. The 86 MMS primarily accomplishes its mission by collaborating with contractors and the host nation at each site. The partnerships established at USAFE joint pre-position sites results in substantial cost-savings for USAFE, as zero personnel and zero aircraft are

[163] Calder, *Embattled Garrisons*, 53.

[164] Rodney M. Mason, "United States Air Force Maritime Pre-positioning of War Reserve Material and Joint Reception, Staging, Onward Movement, and Integration," (Master's thesis, U.S. Army Command and General Staff College, Fort Leavenworth, KS, 2001): 46.

permanently located at the JPS.[165] The reliance on host nation personnel and contractors to perform the day-to-day support requirements for USAFE's Pre-positioned WRM results in a smaller overseas USAFE presence. Figure 5 depicts the two Norwegian airfields operating as USAFE joint pre-position sites.

Figure 5. USAFE Joint Pre-Position Sites (After Infoplease, 2011)

It should be noted that not every JPS equates to a single airfield, unlike the other categories of installations discussed in this thesis. DoD policy tasks the Services to "acquire and maintain, in peacetime, war materiel inventories sufficient to attain and sustain operational objectives."[166] Pre-positioned WRM may be located at airfields, ground-based storage facilities, seaports, or aboard ships afloat. Additional JPS airfields should be established within the European

[165] Mason, "Maritime Pre-positioning of War Reserve Material," 46.

[166] DOD Instruction 3110.06, "War Reserve Materiel (WRM) Policy," June 23, 2008, 2.

AOR, but not as stand-alone JPS airfields. The stockpiling of equipment function is easily merged at airfields operating as FOS, CSL or key nodes of the En Route Infrastructure (ERI). Finding additional NATO members like Luxembourg and Norway willing to undertake the responsibilities of hosting a joint pre-position site promotes further collaboration within the Alliance.

B. SANEM, LUXEMBOURG

The U.S. Army turned over the storage complex in Sanem, Luxembourg to USAFE in 1994.[167] Some reports have as much as 95 percent of USAFE's WRM located at the storage depot in Sanem. The collection of war reserve materiel located at Sanem has been valued at $400 million.[168] The facility at Sanem is landlocked in Central Europe, requiring WRM taken from the Sanem warehouses to be trucked nearly two hours east to Ramstein. Once at Ramstein, the WRM is then airlifted throughout the European AOR as required.

Two concerns exist with the Sanem JPS. First, a heavy reliance is placed on this facility if reports are true that 95-percent of USAFE's WRM are located here. Such a heavy concentration of WRM becomes vulnerable to interruptions of the transportation systems surrounding the storage complex. If significant interruptions of the transportation systems do occur, the movement of critical WRM assets may be suspended or halted. Therefore, the operations at the far end of the supply chain requiring the war reserve materiel are put at risk. Second, the movement of WRM at Sanem relies initially on ground-based transportation (trucks or trains). (Ramstein, a two-hour drive to the east, is the closest USAFE airfield.) The closest seaports to Sanem lie on the North Sea,

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[167] Jennifer H. Svan, "Luxembourg is familiar ground for maintenance squadron," *Stars and Stripes*, June 22, 2009, accessed November 26, 2011, http://www.stripes.com/news/luxembourg-is-familiar-ground-for-maintenance-squadron-1.92677.

[168] John Ross, "U.S., Luxembourg partnership supports U.S. troop surge in Afghanistan," The Official Web Site of the U.S. Air Force, March 5, 2010, accessed December 19, 2011, http://www.af.mil/news/story.asp?id=123193285.

approximately three hours by truck to the north. The facility at Sanem does not offer "multimodal transport options" recommended for WRM joint Pre-position sites by a recent RAND study.[169]

C. NORWAY

In addition to the storage facility at Sanem, USAFE WRM is Pre-positioned at two airfields in Norway, Sola Air Station near Stavanger and Bodo Air Station.[170] Similar to the Sanem operation, day-to-day upkeep of the WRM Pre-positioned at Sola and Bodo is the responsibility of the host-nation and contractors. Airmen of the 86 MMS based at Ramstein travel to the Norwegian airfields to conduct biannual inspections of the sites and to inventory the equipment.[171] The value of the WRM Pre-positioned at the two Norwegian airfields was not identified. Additional information pertaining to each Norwegian airfield is provided below.

1. Sola Air Station (Stavanger), Norway

Opened in 1937, Sola Air Station acts as both a military airfield—home to Royal Norwegian Air Force search and rescue helicopters—and a civilian airport servicing the local community. In October 2003, NATO established the Joint Warfare Center in Stavanger.[172] The co-located 426th Air Base Squadron (426 ABS) provides support to U.S. military members assigned to NATO's Joint Warfare Center and other USAF families located in Norway. However, the 426 ABS does not have any association with the WRM maintained at Sola.

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[169] RAND Project Air Force, "Positioning War Reserve Materiel Requires a Flexible, Global Approach," 2006.

[170] Stephen Martin, "86th MMS takes mission to Arctic Circle," U.S. Air Forces in Europe, November 3, 2010, accessed November 26, 2011, http://www.usafe.af.mil/news/story.asp?id=123229152.

[171] Ibid.

[172] "JWC History and Background," NATO's Joint Warfare Centre, last modified August 24, 2004, http://www.jwc.nato.int/category.php?categoryID=45.

2. Bodo Air Station, Norway

Located within the Arctic Circle, Bodo Air Station is also shared by the Royal Norwegian Air Force and the local community as a civilian airport. Both F-16s, and search and rescue helicopters of the Royal Norwegian Air Force currently operate from the airfield. Bodo first opened in 1921, but a runway was not constructed until 1941 (by German occupying forces). Details of precisely what units and aircraft the U.S. Air Force operated from the air station over the years were difficult to come by. It is believed both U-2 and F-104 aircraft operated from Bodo during the Cold War.[173]

The brief summary of Sola and Bodo air stations is outlined to emphasize the well-established and continuing partnership between the United States and Norway. While the United States has not permanently stationed any aircraft within Norwegian territory, Norway has fulfilled NATO Alliance responsibilities by storing WRM for the United States for decades. The stockpiles of WRM located at Sola and Bodo air stations provide USAFE vehicles and equipment in support of training exercises and the full spectrum of crises.

D. RECOMMENDATIONS FOR JOINT PRE-POSITION SITES

Hosting joint pre-position sites to store WRM has allowed smaller NATO members to increase their contribution to the Alliance. Both Luxembourg and Norway are founding members of NATO. In addition, both nations are relatively small in terms of population and military strength in comparison to other NATO members like Germany, Italy, the United Kingdom, and the United States. Their contribution as JPS hosts should not be understated, as every burden-sharing effort should be welcomed in the resource-constrained environment currently facing the United States and Europe. As NATO membership expands, other countries in similar (diminutive) situations should be considered for similar contributions.

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[173] "Luftforsvaret/Royal Norwegian Air Force—Facilities," GlobalSecurity.org, last modified July 11, 2011, http://www.globalsecurity.org/military/world/europe/no-luftforsvaret-facilities.htm.

However, country size should not be the determining factor in establishing additional JPS across Europe. War reserve materiel should be targeted for pre-positioning sites that provide the greatest strategic advantage. One consideration should definitely be the access to “multimodal transport options” as identified by the RAND study. Close proximity to ground-based transportation networks, seaports, and airfields supplies logisticians with increased flexibility for moving WRM assets forward. “Multimodal transport options” should carry significant weight in the decision to establish additional JPS in Europe. Based on the current location of USAFE joint pre-position sites in Luxembourg and Norway, consideration should be given for JPS locations in Eastern Europe and along the Mediterranean.

VI. EN ROUTE INFRASTRUCTURE

A. INTRODUCTION

The ideal airfield portfolio involves a network of sites that can rapidly adjust its infrastructure to support numerous missions In this arrangement, an airfield categorized today as a forward-operating site can be easily transformed into a joint pre-position site or critical node of the en route infrastructure tomorrow. Alternately, a main operating base hosting a tactical fighter wing can be converted into a forward-operating site for humanitarian airlift missions in support of the latest natural disaster. Every USAFE airfield should be considered for infrastructure improvements that enhance its ability to support multi-functional operations, especially support to the Air Force's en route system.

The U.S. Air Force claims that one tool it brings to today's fight is Global Reach. Global Reach is defined as "the ability to project military capability responsively—with unrivaled velocity and precision—to any point on or above the earth, and provide mobility to rapidly supply, position, or reposition Joint forces."[174] Depending on the location of any particular crisis or contingency, access and utilization of any airfield could hold the key to the U.S. Air Force achieving Global Reach success. Critical to maintaining this ability to project military power to any corner of the globe is the en-route infrastructure (ERI) maintained by the U.S. military services. Many of the USAFE airfields previously categorized as a MOB or FOS are simultaneously principal actors for the U.S. Air Force in terms of its en route system. As previously noted, Ramstein and Spangdahlem recently absorbed the throughput airlift capacity that once transited Rhein-Main Air Base. The additional capability to support the USAF en route system at these two MOBs has been critical to the war efforts in Iraq and Afghanistan.

[174] U.S. Air Force, "AF101 Briefing," July 5, 2011, slide 6.

Calder recognized ERI bases held the characteristics of being "strategically located," "enduring," and serving as "anchor points for throughput."[175] Outside of the MOBs and FOSs already covered in this thesis, one USAFE airfield meets this criteria: Lajes Field, Portugal. Figure 6 notes Lajes Field is located in the middle of the Atlantic Ocean.

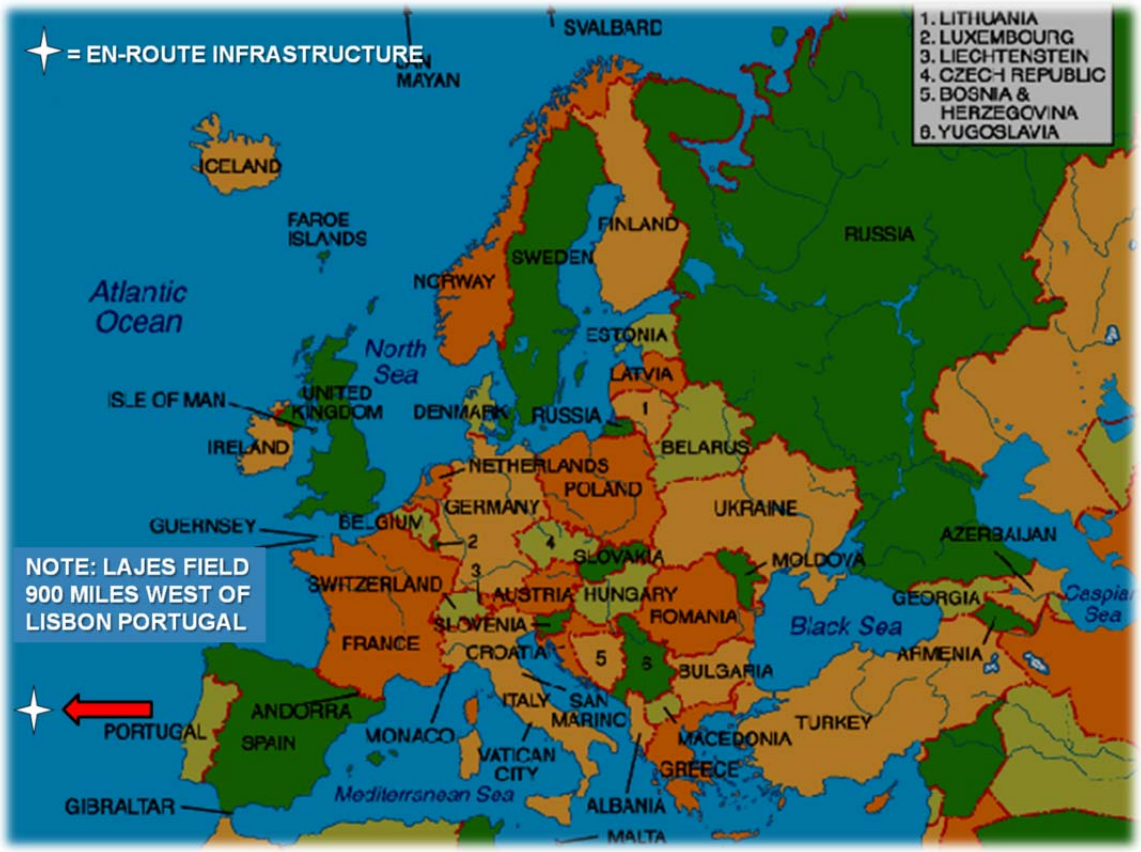

Figure 6. USAFE En Route Infrastructure (After Infoplease, 2011)

B. LAJES FIELD, PORTUGAL

The Azores is a collection of nine small islands located in the middle of the Atlantic Ocean. Over 2,000 miles east of New York City and nearly 900 miles west of Lisbon, Portugal, the Azores have proven to be a critical stopover for ships and airplanes crossing the Atlantic for centuries. Following the 1928 crash

[175] Calder, *Embattled Garrisons*, 53.

of a Polish aircraft, the Portuguese government decided to construct an airfield on one of the islands. Several landing strips of packed earth were eventually constructed during the 1930s. One of these early landing strips was constructed on the island of Terceira, and it is known today as Air Base 4 or Lajes Field.[176]

Lajes Field proved to be a strategically important location for British and American aircraft maneuvering across the Atlantic during World War II. During the latter stages of the war, the U.S. Army sent an Engineer Regiment and Engineer Battalion to Lajes to construct an air base. Throughput of aircraft skyrocketed after the completion of the air base, and the utilization of Lajes Field cut the flying time between the CONUS and North Africa nearly in half—from seventy to forty hours.[177] While Lajes Field was transferred back to Portuguese control following the end of World War II, the U.S. presence at the airfield has remained constant ever since.

Throughout the sixty-four–year history of the U.S. Air Force, Lajes Field has played a significant role in nearly every major operation undertaken. From the Berlin Airlift to Operation Unified Protector, Lajes Field has serviced thousands of aircraft going to and coming from the fight. Its infrastructure through the years has gradually expanded. Today, the airfield at Lajes includes a large runway measuring nearly 11,000 feet by 300 feet wide, and a massive aircraft parking apron.

The 65th Air Base Wing (65 ABW) is the latest designation of the host unit at Lajes. The airfield involves a U.S. investment similar in size to Incirlik, a forward-operating site, and the smaller main operating bases at Mildenhall and Aviano. The PRV calculated for Lajes is nearly $1.2 billion. While no USAF aircraft are permanently assigned to the 65 ABW, the installation boasts a U.S. population of 1,336 employees[178] (see Table 4).

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176 "Lajes Field History—The Origins," Lajes Field, June 6, 2006, accessed November 26, 2011, http://www.lajes.af.mil/library/factsheets/factsheet.asp?id=3998.

177 "Lajes Field History—The U.S. Enters the Azores," Lajes Field, June 6, 2006, accessed November 26, 2011, http://www.lajes.af.mil/library/factsheets/factsheet.asp?id=4000.

178 Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*, DOD-91.

The United States has paid for a vast majority of the infrastructure expansions at Lajes over the years. However, earlier in 2011 the entire runway at Lajes was re-surfaced for $7.045 million. The Portuguese government contributed $1.26 million to this project, "the first ever cost-share project" in Lajes' history.[179] On the other hand, the United States pays significant amounts for continued access at this critically important strategic location. Calder notes, "Portugal also long provided extensive base-related community support in the Azores, facilitated by substantial American economic assistance in return for access to the strategically important Lajes Air Base."[180] The United States Agency for International Development estimates the total economic and military assistance provided to Portugal from 1962 to 2009 was nearly $2.9 billion.[181] Deciphering exactly what percentage of this amount was intended as payment for access to Lajes Field is impossible to determine. Nevertheless, Lajes will remain a stronghold of the USAF En Route Infrastructure despite these substantial costs and lack of burden sharing by the host nation. Zero alternatives exist as substitute aircraft landing locations in the middle of the Atlantic.

ERI	ESTABLISHED (USAF)	PRV ($B)	HOST UNIT	# OF PERSONNEL	AIRCRAFT
LAJES FIELD	1934 PORTUGAL (WWII)	1.2	65 ABW	1,336	NONE

Table 4. USAFE En Route Infrastructure

[179] Alyson Busch, "The Lajes runway repair—combined partnership at its best," Lajes Field, February 18, 2011, accessed December 21, 2011, http://www.lajes.af.mil/news/story.asp?id=123243279.

[180] Calder, *Embattled Garrisons*, 139.

[181] "U.S. Overseas Loans and Grants," U.s. Agency for International Development," accessed December 21, 2011, http://gbk.eads.usaidallnet.gov/query/do.

C. OTHER ERI AIRFIELDS

Two airfields operated by the U.S. Navy, Naval Station Rota and Naval Air Station Sigonella are worth mentioning as part of the En Route Infrastructure within Europe. These airfields do not qualify as members of the USAFE portfolio since the primary U.S. presence is not Air Force. However, both airfields contribute immensely as "anchor points for throughput."

1. Naval Station Rota, Spain

Strategically placed within fifty miles of the Straits of Gibraltar, Naval Station Rota consists of port facilities capable of supporting a variety of ships and submarines, and a large airfield. The airfield includes a runway measuring 12,000 feet long by 200 feet wide, and parking aprons and fuel hydrants recently constructed to support large cargo planes.[182] The port facilities and airfield at Rota are shared by the Spanish and U.S. navies. Additionally, Rota is home to the 725th Air Mobility Squadron (725 AMS) that is tasked with providing "en route maintenance, launch and recovery, and command and control for all of Air Mobility Command's strategic, theater, and contract commercial aircraft transiting Naval Station Rota."[183] During the past decade, Rota has become a mobility hub for cargo planes traveling between the United States and the Central Command AOR. At one point during the build up to the Iraq War, Air Force officials estimate "a quarter of all planes carrying cargo to the Middle East stopped at Naval Station Rota and Moron Air Base"[184] (Moron is located seventy-five miles northeast of Rota).

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[182] Scott Schonauer, "Rota airfield to get $10.5M repair job," *Stars and Stripes*, October 5, 2003, accessed December 21, 2011, http://www.stripes.com/news/rota-airfield-to-get-10-5m-repair-job-1.12254.

[183] "725 th Air Mobility Squadron," CNIC//Naval Station Rota, accessed December 21, 2011, http://www.cnic.navy.mil/Rota/About/TenantCommands/725thAirMobilitySquadron/index.htm.

[184] Schonauer, "Rota airfield to get $10.5M repair job."

2. Naval Air Station Sigonella, Italy

Located in the middle of the Mediterranean Sea, Naval Air Station Sigonella is nicknamed "the Hub of the Med" due to its long history of maintenance and operational support to naval aircraft and ships on patrol in the area. Similar to Rota's transition to a mobility hub, Sigonella is a second naval airfield "undergoing a transformation" from a maritime patrol airfield to a multi-role mobility hub, linking the United States and Europe to Central Command and Africa Command's AORs.[185] A small detachment of 725 AMS personnel is permanently assigned to Sigonella to provide key mission support functions to cargo planes utilizing the airfield. Over the past decade, Sigonella has experienced a major increase in USAF aircraft transiting the installation due to the continuing U.S. military commitments in Central Command's AOR.

D. RECOMMENDATIONS FOR USAFE EN ROUTE INFRASTRUCTURE

The two naval airfields discussed in this chapter do not qualify as members of USAFE's airfield portfolio. Yet, defining their large role in the en route infrastructure utilized by USAF aircraft assists in outlining the continuing need for the DoD to look for partnering opportunities within the joint community. This is especially important with airfield infrastructure, which is extremely expensive to build and maintain. Many of USAFE's airfields discussed in previous chapters support the en route system in addition to other capabilities that they provide. This multi-mission capability at numerous airfields provides air mobility planners tremendous flexibility. Opportunities to expand the infrastructure at other airfields to increase the flexibility of the en route system even further should always be welcomed. As mentioned earlier in this chapter, Lajes Field is irreplaceable!

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[185] "Naval Air Station Sigonella," GlobalSecurity.org, last modified July 05, 2011, http://www.globalsecurity.org/military/facility/sigonella.htm.

VII. RECOMMENDATIONS AND CONCLUSION

Before this chapter can turn to recommendations specific to the European theater and USAFE's portfolio of airfields, it is important to emphasize the need for systemic analysis of military airfields and installations around the world. In the *Leasehold Empire*, Sandars details the local, state, and regional negotiations practiced by the United States in securing basing rights and access. However, rarely are the comprehensive effects to the entire global network of U.S. military installations understood when one airfield, base, or installation is closed or modified.

In 1990, Blaker noted much of the "basing redundancy has been trimmed from the system."[186] Because of the lack of redundancy within the basing system, an interrelated character exists among the different sites. For over a decade, the USAFE airfield portfolio has proven this interrelated character extends beyond the boundaries of any one particular theater. As Calder commented, "The U.S. military moved more troops and equipment in the first three weeks of the Gulf War than it did in the first three months of the Korean War."[187] Nearly every airfield within USAFE's portfolio participated in the movement of aircraft, personnel, and equipment to Central Command's AOR during the past decade of operations in Iraq and Afghanistan. Without the USAFE airfield portfolio, conducting operations in Southwest Asia would be far more expensive and immeasurably slower.

Two decades after Blaker's identification regarding the loss of redundancy within the overseas basing structure of the U.S. military, additional capacity has been trimmed, especially within Europe. Recall Admiral Stavridis, current Commander of U.S. European Command, testified that approximately 75 percent of the United States' forward military presence in Europe has been cut since the end of the Cold War. Troop levels have been reduced from 400,000 to 80,000,

[186] Blaker, *An Anatomy of the Dilemma*, 129.

[187] Calder, *Embattled Garrisons*, 236.

and just twelve main operating bases and many smaller installations remain from the 1,200 military installations of the Cold War era. USAFE's share of the current force structure within Europe includes nearly 32,000 military and civilian personnel,[188] five main operating bases, and many other geographically separated sites and locations. Following Blaker's logic, less redundancy equates to greater interdependence. This is especially true of military airfields around the globe due to the extended range of multiple aircraft currently employed by the USAF. This model particularly applies to USAFE's holdings amid changing strategic focus and pending budget cuts.

A. SUMMARY OF USAFE'S PORTFOLIO OF AIRFIELDS

USAFE's existing airfield portfolio includes five main operating bases, three forward-operating sites, six cooperative-security locations, two joint pre-position sites, and one en route infrastructure airfield—seventeen airfields spread across the territory of ten nations. Not included in this count is the large storage facility in Sanem, Luxembourg, that acts as a key joint pre-position site for USAFE. The Sanem facility is not an airfield, and it is not collocated with an airfield. Airfields operated by the U.S. Navy at Rota, Spain and Sigonella, Italy are also not included in this count. While both airfields support USAF aircraft and operations, the facilities and infrastructure maintained at these locations fall under the purview of the U.S. Naval Forces Europe, not USAFE. See Figure 7 for a display of the seventeen airfields included in USAFE's portfolio.

USAFE's seventeen airfields are primarily the remnants of much larger, more dispersed airfield networks established during either World War II or the early stages of the Cold War. Over the decades, U.S. national strategy has been periodically redefined, military technology has advanced, and the European security environment has evolved. Today, the vast majority of the European AOR rests peacefully, stable and secure. While many endorse additional U.S.

[188] Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*. Total personnel at all identified USAFE airfields (not including Papa Airfield, Hungary) was calculated at nearly 32,000 employees.

military reductions in Europe due to the enduring stability and security, this thesis encourages an expansion in Europe in terms of USAFE airfields.

The twenty-first–century USAFE airfield expansion must differ significantly from past military airfield development in Europe. Past expansions resulted in movements to defend Western Europe. Today, no imminent security threat is looming within the continent. To broaden the peace, security, and stability enjoyed across Europe today, the twenty-first–century airfield expansion must understand a fight-in-place U.S. force is not required. Such an expansion must be centered on building partnerships and capitalizing on existing alliances in order to extend the peace, security, and stability in Europe to its periphery and beyond.

Figure 7. USAFE Portfolio of Airfields (After Infoplease, 2011)

B. NEED FOR SYSTEMIC ANALYSIS OF MILITARY AIRFIELDS AND INSTALLATIONS

This thesis is simply the tip of the iceberg when it comes to research and analysis required of the U.S. network of overseas military airfields. Studies centered on the permission costs and operating costs associated with military airfields are highly recommended. Such a study will enable U.S. military leaders at all levels greater understanding of resources required to acquire differing levels of airfield capacity and capability. Additionally, future studies of the U.S. military airfields and installations overseas are encouraged to approach each project with a systemic point of view. As Blaker stated, "U.S. overseas basing is best understood as a global system."[189] And Calder commented, "The system as a whole is global."[190] Studies involving one, two, or dozens of military airfields must consider the global implications within their analysis.

This research project is an example of the kind of examination due for the entire network of U.S. military airfields around the world. Additional regional studies centered on North America, South America, Africa, Southwest Asia, Northeast Asia, the Pacific, and Australia are all required for the United States to reevaluate its entire forward military presence (overseas) in light of changing strategic priorities. Furthermore, studies of the global airfield networks maintained by U.S. sister services and close allies should also be undertaken to help piece together this worldwide airfield puzzle. As each regional piece is filled in, DoD will be better able to determine where overlapping capabilities and airfield capacity might be conducive to consolidation and divestment of infrastructure and which areas require an increased presence or greater airfield redundancy, demanding additional airfields to be established.

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[189] Blaker, *An Anatomy of the Dilemma*, 130.

[190] Calder, *Embattled Garrisons*, 236.

C. NATO EXPANSION = USAFE SHIFT TO THE EAST

"NATO's ongoing enlargement process poses no threat to any country. It is aimed at promoting stability and cooperation, at building a Europe whole and free, united in peace, democracy and common values."[191] This statement highlights one of the conclusions assumed following a 1995 study on NATO enlargement. The post–Cold-War era has meant expansion and enlargement for NATO. Twelve new countries have joined the Alliance: Czech Republic, Hungary and Poland in 1999; Lithuania, Estonia, Latvia, Bulgaria, Romania, Slovakia, and Slovenia in 2004; and Albania and Croatia in 2009. The future promises increased membership for NATO as Macedonia, Bosnia and Herzegovina, Montenegro, Georgia, and Ukraine are all aspiring members. Figure 8 reflects the eastern expansion of NATO as ex-Warsaw Pact nations have joined allegiances with the democracies of Western Europe, Canada, and the United States.

[191] "NATO enlargement," North Atlantic Treaty Organization, last modified May 04, 2011, http://www.nato.int/cps/en/natolive/topics_49212.htm.

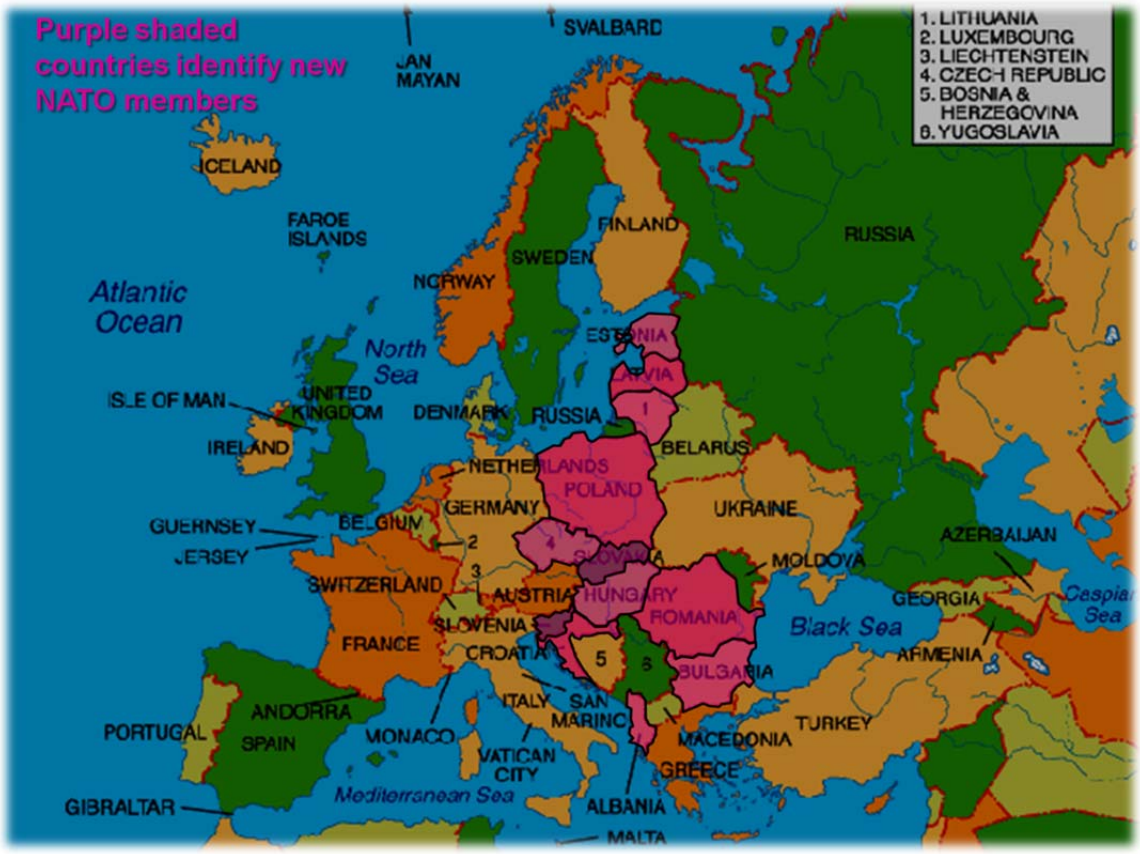

Figure 8. Post-Cold War NATO Members (After Infoplease, 2011)

Just one of the seventeen airfields in USAFE's current portfolio resides in the territory of a new NATO ally, Papa Airfield in Hungary. Recent reports, operations, and training exercises indicate USAFE is working with the new NATO allies of Eastern Europe. Bases and airfields in Bulgaria and Romania were utilized during the 2003 American-led invasion of Iraq.[192] More recently, Exercise Dacian Thunder held in August 2011 involved airmen and A-10s from Spangdahlem. U.S. airmen and aircraft deployed to Romania to work with Romanian airmen, and MiG-21s and IAR 330 helicopters.[193] In October 2011, Operation Thracian Fall provided an off-station training opportunity for U.S.

[192] "US European Command Facilities," GlobalSecurity.org, last modified July 05, 2011, http://www.globalsecurity.org/military/facility/eucom.htm.

[193] Stephani Hunter, "Joint training builds NATO partnership," U.S. Air Forces in Europe, last modified August 04, 2011, http://www.usafe.af.mil/news/story.asp?id=123266445.

airmen from Ramstein. Staging from and flying C-130J aircraft in Bulgaria enabled the U.S. airmen to improve interoperability with Bulgarian air and ground forces.[194]

However, only one report has indicated the establishment of a new permanent USAFE presence at an airfield in Eastern Europe. On June 13, 2011, the United States and Poland signed an agreement that will place U.S. airmen, F-16 fighters, and C-130 transport aircraft on Polish soil. The U.S. presence will initially occur through rotational deployments in 2013, and it is expected to transition to a permanent U.S. presence by 2018. As of the publication of this report, the total numbers of U.S. personnel and aircraft involved have not been announced.

The 2011 agreement to establish a permanent USAFE presence in Poland signifies an important shift, a shift that appears to coincide with NATO's expansion to the east. The current global security environment, where the center of gravity for U.S. military operations remains Central Command's AOR, strategically invites the expansion of the USAFE portfolio of airfields to the east. Many airfield locations within this territorial band of new NATO allies are hundreds to thousands of miles closer to such potential hot spots as the Middle East and Iran. Additionally, expanding USAFE's airfield portfolio into Eastern Europe enables the command to re-develop some valuable redundancy that was lost with the numerous airfield and installation closures of the past twenty years. The challenge will be to expand the USAFE portfolio of airfields while simultaneously reducing the overall costs.

D. MORE AIRFIELDS = MORE OPPORTUNITIES

Chapter II provided an in-depth analysis of the five main operating bases of USAFE's airfield portfolio. It begins by noting that the MOBs at Ramstein, Spangdahlem, Lakenheath, Mildenhall, and Aviano comprise 86 percent of

[194] "C-130Js take flight in mountains of Bulgaria in OTF11," U.S. Air Forces Europe, last modified October 18, 2011, http://www.usafe.af.mil/news/story.asp?id=123276304.

USAFE's nearly 32,000 military and civilian personnel.[195] Also, the five MOBs host 99 percent of the 215 aircraft assigned to USAFE. This heavy concentration of forces at USAFE's five main operating bases comes at an average infrastructure cost (PRV) of $2.1 billion, with an average workforce of 5,500 employees. In comparison, the average infrastructure cost at the nine airfields categorized as forward-operating sites, cooperative-security locations (excluding Papa Airfield, Hungary for which data was not available), and en route infrastructure is $0.48 billion—less than a quarter of the average invested at a MOB. Additionally, these same nine airfields are operated with a combined military and civilian workforce of 4,345 personnel, more than 1,000 fewer people than the average personnel employed at one MOB.

This thesis assumes no strategic requirement exists for maintaining the three fighter wings at Lakenheath, Spangdahlem, and Aviano. The fight-in-place force requirement of the Cold War is no more. Additionally, many NATO allies maintain robust advanced fighter forces of their own. Thus, serious consideration should be given to the redeployment of these three fighter wings to airfields within the CONUS. If adopted, the infrastructure in place at these three main operating bases can be transformed to support USAFE strategic requirements as a FOS, CSL, JPS or ERI airfield. The four different lower-level installations all operate with significantly reduced infrastructure and manpower investments in contrast to USAFE's main operating bases. They represent the "lighter" installations for which Calder argued.[196]

Savings produced by the divestment of infrastructure at the three fighter MOBs will enable USAFE to shift operations and build (missing) redundancy at airfields in Eastern Europe. More and "lighter" airfields across Europe will present USAFE with increased opportunities for building partnership capacity and enhancing new NATO relationships.

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[195] Office of the Deputy Under Secretary of Defense (Installations & Environment), *2010 Base Structure Report*. Total personnel calculated at the five MOBs equaled 27,602 military and civilian members.

[196] Calder, *Embattled Garrisons*, 33.

E. DEVELOP TRUE PARTNERSHIPS

The traditional USAF approach to the establishment of overseas airfields included the development of expensive family support infrastructures. Little reliance was placed on the host nation to provide housing, medical, educational or recreational support to assigned airmen and their families. The recently established Heavy Airlift Wing at Papa Airfield, Hungary offers USAFE a new organizational model, where only minimal U.S.-only infrastructure has been constructed. Airmen and families assigned to Papa Airfield will be expected to rely heavily on the local Hungarian communities for family support activities. The effectiveness of the Heavy Airlift Wing's lean support structure should be thoroughly evaluated. If successful, implementation of this lean, "lighter" structure should be employed at existing USAFE airfields and future airfields that may be established in Eastern Europe.

The specialized unit cooperative-security location, represented by the four MUNSS in place at NATO fighter wings, presents a second model that USAFE should consider employing at airfields across Europe. The MUNSS model is associated with the highly specialized operations involving non-strategic nuclear weapons. However, the concept of the specialized unit CSL can flex in support of the needs of the host nation. USAFE maintenance personnel could be assigned to Poland to assist with the maintenance of Polish F-16s. Security forces personnel could be assigned to an airfield in Albania in an effort to build the partnership capacity of this new NATO ally. Dozens of other examples of numerous Air Force specialties could be presented here as opportunities for USAFE to expand its partnership capacity building program.

John C. Maxwell, author of numerous books on leadership and management, skillfully defined the difference between cooperation and collaboration. In *The 17 Essential Qualities of a Team Player*, Maxwell writes: "Cooperation is merely working together agreeably, but collaborating means

working together more aggressively."[197] For the most part, the U.S. military has been cooperating with military allies around the world.

The demanding twenty-first-century security environment and challenging budget situation will require the United States to start collaborating with allies. Calder points out installations operating under the framework of a bilateral or multilateral alliance are regarded with greater legitimacy.[198] Thus, the United States should push these alliance frameworks to the forefront. USAFE must drive other NATO allies toward true partnerships where collaboration is required and an increased sharing of security responsibilities persists at every installation and every airfield. When NATO partnerships are fully developed and collaboration is completely realized, USAFE's airfield portfolio will consist of numerous integrated flying wings similar to those currently found at Geilenkirchen and Papa Airfield.

Increased collaboration is required with USAFE's sister services as well. Airfields operated by NAVEUR and USAREUR need to be evaluated for their individual capability and capacity to support USAFE operations. As discussed in Chapter VI, the naval airfields at Rota and Sigonella currently provide substantial support to the U.S. Air Force en route infrastructure. A third NAVEUR airfield is located at Naval Support Activity Souda Bay on the Greek island of Crete. USAREUR operates seven smaller airfields primarily for helicopter operations. All seven of USAREUR's airfields are located in Germany. These ten airfields operated by NAVEUR and USAREUR likely offer USAFE opportunities to establish additional lower-level infrastructure (JPS or ERI) capabilities without requiring a large financial investment.

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[197] John C. Maxwell, *The 17 Essential Qualities of a Team Player* (Nashville: Thomas Nelson, 2002), 10.

[198] Calder, *Embattled Garrisons*, 71.

F. CONCLUSION

"A smaller military, no matter how superb, will be able to go fewer places and be able to do fewer things,"[199] according to then-Defense Secretary Robert Gates final testimony to the Senate Appropriations defense subcommittee on June 15, 2011. Secretary Gates retired on June 30, 2011, but not before he warned of the potential impacts the $400 billion in cuts proposed by President Obama over the next twelve years might have on the U.S. military if the reductions are not managed effectively. With the failure of the Joint Committee on Deficit Reduction, the "super committee," in November 2011, the Department of Defense potentially faces reductions of $968 billion over the next ten years (2012–2021).[200] Before the super committee's failure, current Defense Secretary Leon Panetta warned the automatic sequestration cuts triggered by the super committee's failure would result "in hollowing out the force."[201] A hollow force typically characterized by "fewer personnel and weapons systems, slowed military modernization, reduced readiness for operations, and continued stress on the all-volunteer force."[202]

Smaller military, fewer personnel, fewer weapons systems, going fewer places and doing fewer things! Are these the only alternatives the U.S. military has while facing significantly reduced budgets over the next ten years? This thesis proposes an alternative approach that enables a smaller force to go to more places and do more things. Pressures to reduce the U.S. military's overseas basing structure will mount as additional budget cuts loom. Officials

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[199] Rick Maze, "Gates, Mullen warn cuts may create hollow force," *Air Force Times*, June 27, 2011, 10.

[200] Lawrence P. Farrell, Jr., "Budget Control Act of 2011 Forces Real Cuts to Defense, and Difficult Choices," *National Defense*, September 2011, accessed December 30, 2011, http://www.nationaldefensemagazine.org/archive/2011/September/Pages/BudgetControlActof2011ForcesRealCutstoDefense,andDifficultChoices.aspx.

[201] Marcus Weisgerber, "Panetta Raises Specter of Hollow Force," *Defense News*, August 16, 2011, accessed December 30, 2011, http://www.defensenews.com/story.php?i=7404691.

[202] "Defending Defense: Warning: Hollow Force Ahead!" A joint project of American Enterprise Institute, Foreign Policy Initiative, and The Heritage Foundation, July 21, 2011, accessed December 30, 2011, http://www.heritage.org/research/reports/2011/07/defending-defense-warning-hollow-force-ahead.

must fight the urge to slash airfields and installations considered excess. As Blaker warned, "Once dismantled, rebuilding an overseas basing system would not be easy, cheap, or quickly done."[203] More and "lighter" airfields will enable USAFE to expand its presence into Eastern Europe, and build collaborative relationships with joint and European partners across the region.

Despite the shrinking budgets, this thesis proposes expanding USAFE's portfolio of airfields. This proposal is not suggesting that additional aircraft and personnel be sent to Europe. In fact, the twenty-first–century USAFE airfield expansion can be accomplished with fewer aircraft and fewer personnel, as long as both are chosen with an eye toward flexibility and interoperability.

USAFE must first reduce its heavy footprint at its five main operating bases. In addition to removing the three permanent fighter wings from Europe, USAFE must leverage the capabilities of the respective host nations (Germany, Italy, and the United Kingdom) of these installations to provide many of the support services currently performed by U.S. airmen. Moreover, USAFE should follow NATO's enlargement into Eastern Europe, making the most of these states' readiness, willingness, and ability to support U.S. requirements in airfields and other basing needs. To be sure, this eastern expansion must be done without the large investment in support infrastructure, which was typical of airfield development in earlier decades. New challenges and new priorities require new approaches, even—or especially—to significant installations like airfields. Greater reliance on old and new NATO allies will enable a smaller USAFE force to go to more places. Ultimately, more airfields will lead to more opportunities to do greater things.

[203] Blaker, *An Anatomy of the Dilemma*, 138.

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